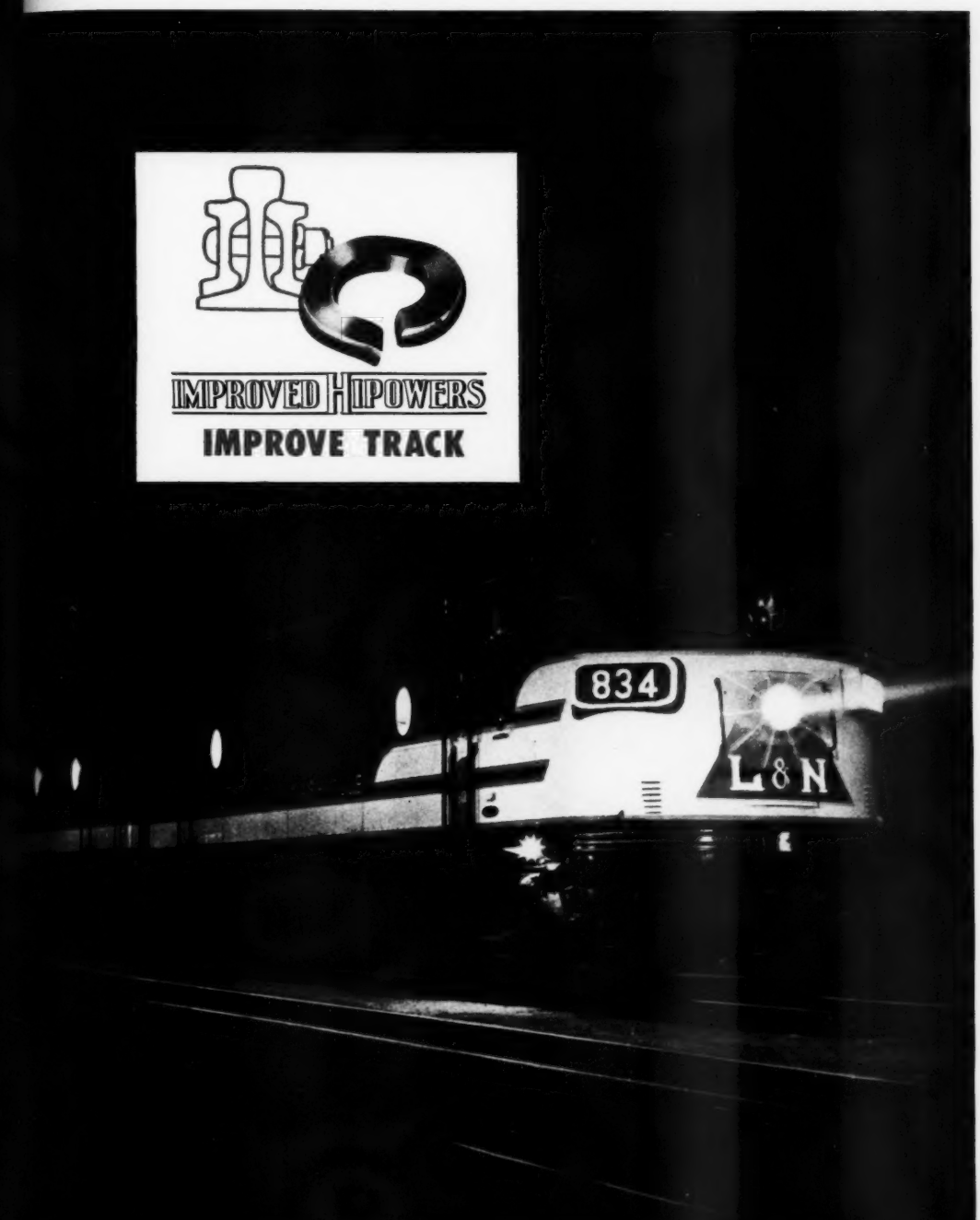
November 1953

RAILWAY TRACK and STRUCTURES

One of Five Specialized Railway Age Publications



24 hours a day, year in and year out, our tremendously powerful railway spring washers are on duty along thousands of miles of well-laid track.

They play an important role by equalizing bolt tensions, by protecting rail ends and joints. They absorb shocks and stresses—*and they reduce maintenance costs.*

(Louisville and Nashville Photo)

THE NATIONAL LOCK WASHER COMPANY, NEWARK 5, N. J., U. S. A.

A COMPLETE LINE OF RAILWAY SPRING WASHERS

Mr. Railroad Executive
America's Railroads

Dear Sir:

Allow us to introduce ourselves — The Kershaw Equipment Leasing Corporation of Montgomery, — a brand-new corporation designed to meet some of your specific needs.

Briefly, our function in the railroad field will be to lease roadbed and trackwork equipment — any type, make or model of equipment — which you may need, and which you may prefer to lease instead of purchase outright.

A variety of lease plans are available. If you are interested in leasing trackwork maintenance equipment, we have the machines and the plans which will best serve you.

Meanwhile, we're looking forward to seeing you personally and to telling you more about our company.

Very truly yours,

KERSHAW EQUIPMENT LEASING CORP

Whatever your roadbed and track machinery needs may be, lease from Kershaw!

- BALLAST REGULATORS
- TRACK BROOMS
- BOLT MACHINES
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- TRACK CRANES
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- TIE NIPPERS
- SPIKE HAMMERS
- TIE DRILLS
- JACKS
- AND MANY OTHERS

KERSHAW

EQUIPMENT LEASING CORPORATION

MONTGOMERY, ALABAMA

Put it where the going's rough

When heavily-loaded wheels lead into a turnout it takes a little giant to brace the straining rail. That's why you can find Bethlehem's 811 Rail Brace standing guard on so many leading railroads. You can put this sturdy brace where the going's rough, and it will never budge.

The 811 owes its stubbornness to some unique features of design. First, the brace itself is firmly welded to the switch plate. Next, driven between the brace and rail web is a rugged forged wedge containing an angular spring steel piece which can take a compressive force of 20,000 lb. Slippage is virtually prevented by the compression alone.

But just to clinch things, the 811 has two pawls which are turned down into slots in the wedge, locking it into place. The pawls make positive adjustment easy: just disengage them, move the wedge to right or left, then re-position the pawls in the slots. Spacing of the slots permits you to make adjustments in 1/16-in. increments.

A trial will convince you that the 811 Rail Brace is foolproof and highly efficient. As a first step in getting acquainted with this steadfast little brute, why not let a Bethlehem representative take you to a nearby installation? You can reach him through the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

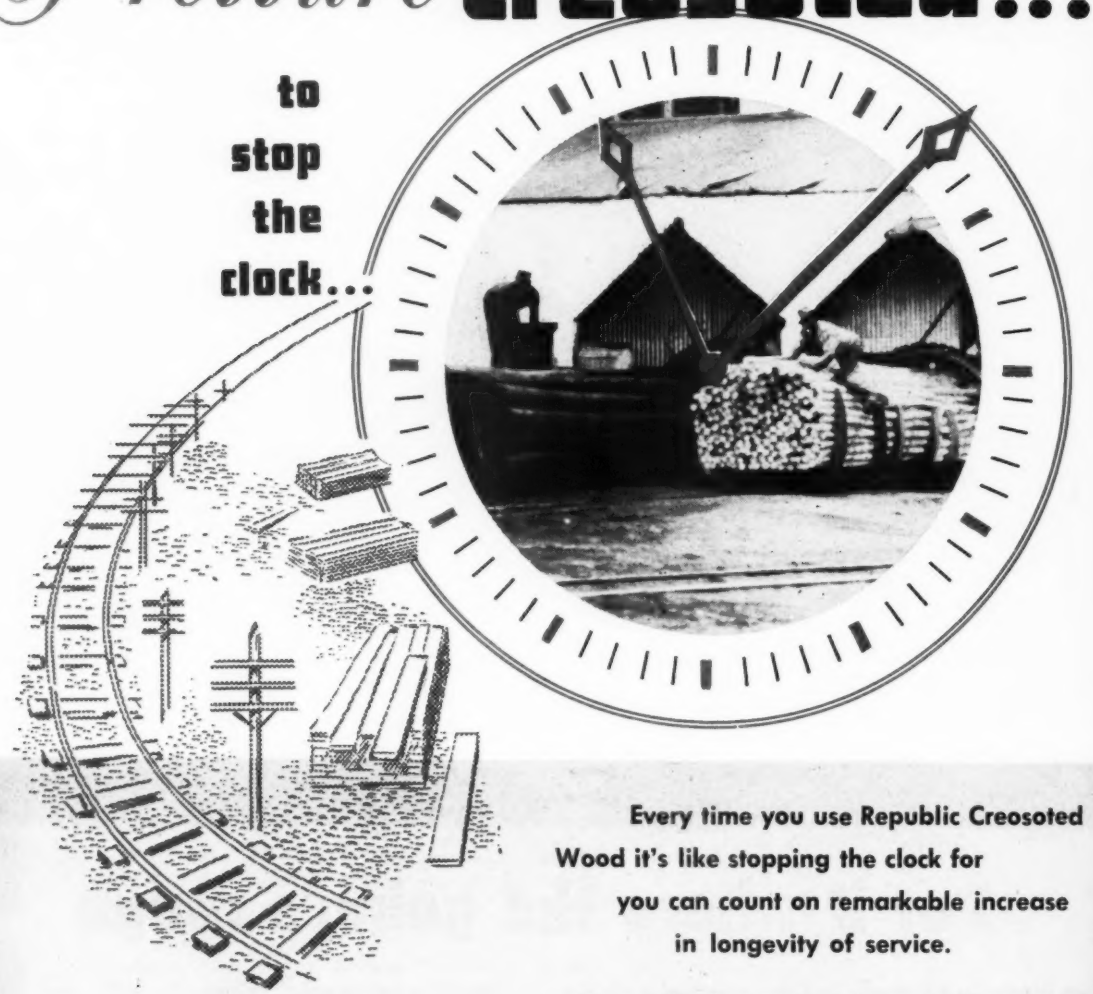
BETHLEHEM STEEL

BETHLEHEM 811 RAIL BRACE

Published monthly by Simmons-Boardman Publishing Corporation, Emmett Street, Bristol, Connecticut, with editorial and executive offices at 79 West Monroe Street, Chicago 3, Illinois; 30 Church Street, New York 7, New York. Subscription prices: to railroad employees only in the United States and Possessions, and Canada, one year $2.00; $3.00 for two years. Single copy 50 cents. Entered as second class matter at the Post Office at Bristol, Conn., November 26, 1954, under act of March 3, 1879. Volume 51, No. 11.

Pressure Creosoted...

to stop the clock...



REPUBLIC CREOSOTED
RAILROAD TIES
LUMBER
WOOD BLOCKS
CROSS ARMS
POLES

Every time you use Republic Creosoted Wood it's like stopping the clock for you can count on remarkable increase in longevity of service.

Even with the constant impact of more than 25 years of heavy rail traffic, many road beds still have the *original creosoted* cross ties in service . . . . . this is but one example of the proved effectiveness of Republic Creosoted Wood products.

It is good business to rely on Republic pressure creosoted wood, backed by a record of over 50 years in service.

Republic CREOSOTED PRODUCTS

REPUBLIC CREOSOTING COMPANY
Merchants Bank Building
Indianapolis, Indiana

A NEW CROSSING ON THE CONTINENTAL DIVIDE FOR THE NORTHERN PACIFIC

HERE's a big Northwest Model 80-D, 2½ yd. Shovel in a cut which will end up as a major line change on the Northern Pacific R. R. This change will by-pass The Homestake Tunnel on The Continental Divide and eliminate high maintenace costs.

The cut will be 106-ft. deep and calls for 350,000 yds. of material. The contractor is the Albert Lalonde Co. of Sidney, Montana.

These big 80-D's make an ideal machine for the heavy railroad jobs. They are easily moved from station to station. They can be loaded and unloaded on one standard flat-car under their own power and without dismantling. Positive Traction on both crawlers while turning as well as when going straight ahead takes them where other machines have difficulty. The Northwest Dual Independent Crowd utilizes force most other independent crowd shovels waste and combined with other advantages makes the 80-D a *real* Rock Shovel. Convertibility from Shovel to standard Crane, Dragline or Pullshovel by simply changing booms brings the versatility that assures an answer to every railroad job. Now is the time to plan for a Northwest. Ask for more details and talk it over with a Northwest Man.

NORTHWEST ENGINEERING COMPANY
1513 Field Building, 135 South La Salle Street
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NORTHWEST

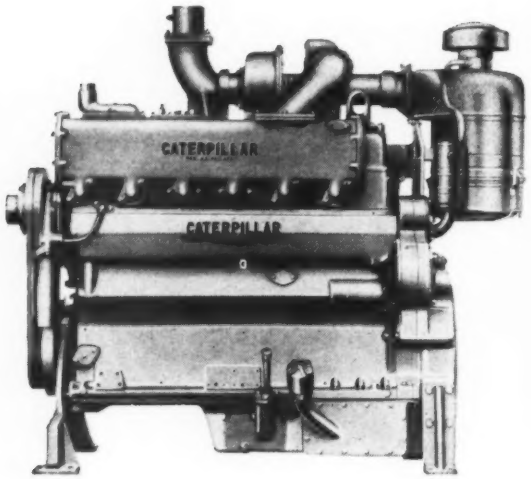
THE ALL PURPOSE RAILROAD MACHINE
CRAWLER OR RUBBER MOUNTED SHOVELS
CRANES • DRAGLINES • PULLSHOVELS

DOES THINGS NO TRACK-TYPE RIG CAN DO

Announcing 2 more new CA

The new D337

Series F with Turbocharger

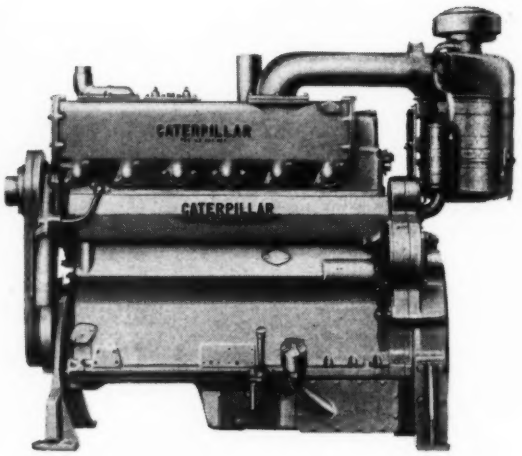


310 HP

maximum @ 2000 r.p.m.

The new D326

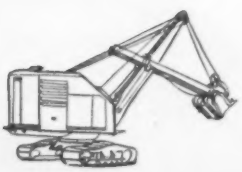
Series F



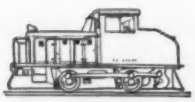
200 HP

maximum @ 2000 r.p.m.

MODERN, COMPACT, HEAVY-DUTY UNITS FOR



- Compressors
- Cranes
- Excavators
- Locomotives
- Boats
  - Work
  - Passenger
  - Ferry



- Electric Power
  - Auxiliary
  - Full time
  - Portable
  - Standby
- Pumping
- Rock Crushers
- Ballast Machinery

Available as original power in many types of equipment . . . direct drive or choice of transmissions, including hydraulic couplings and torque converters. Also available as Electric Sets and Marine Engines.

CAT* RAILROAD DIESELS

CHOICE OF 3 STARTING SYSTEMS

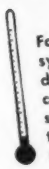
AIR

For fast starts where a supply of compressed air is readily available, a sturdy vane-type air motor is offered. Also available: air compressors and storage equipment.

ELECTRIC

Where speed of starting and convenience are of greatest importance. Also available: automatic start-stop controls which require no operating personnel.

GASOLINE



For all-weather starting. This system preconditions the diesel and supplies full lubrication before the diesel is started. Also available: electric starters for the gasoline starting engine.

Here are the two newest diesels in Caterpillar's modern, heavy-duty line—more efficient, more compact and more powerful than the units they replace. In *any* application, they offer you more for your money than *any* engines in their power range!

Major advances in design and time-tested Caterpillar features combine to make this power pair more productive and economical to operate than ever. For example:

• New Turbocharger (in the D337 Series F) utilizes exhaust heat to drive supercharger. Delivers air in direct proportion to engine's need—less air at low load, more air at full load.

• New hydraulic valve lifters practically eliminate valve adjustment and provide quiet operation.

• New, improved water jets deliver fan-shaped flow, provide more effective cooling.

• Heavy-duty, oil-cooled pistons with chrome-faced rings, built for thousands of hours of work before inspection is necessary.

• Sealed cooling system reduces mineral deposits.

• Full-flow filtering of fuel and lubricating oil.

• A complete line of attachments to meet all your requirements.

All these and other features add up to a new standard of performance—better operation and more power with less maintenance and long life. For full details, see your Caterpillar Dealer. You can always count on him for reliable information and prompt service!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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NEW D337 Series F and NEW D326 Series F— LATEST EXAMPLES OF CATERPILLAR LEADERSHIP IN ACTION

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CATERPILLAR TRACTOR CO., Peoria, Ill., U. S. A.

I'd like more information on the new D337 Series F ☐, D326 Series F ☐.

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Quality Trackwork
UNITED STATES STEEL

l on the job by U.S. Steel

This low-angle, two-rail manganese steel insert crossing, located at Fairless Works, U.S. Steel, has been subjected to constant heavy-duty yard service. Yet it looks much the same as it did the day it was installed. The manganese inserts show little wear and the flame-hardened ends of the carbon rails are still sharp and flush. But this is typical of U.S. Steel crossings—they are built for long term punishment.

USS Quality Trackwork products possess an inherent strength and hardness that gives them longer life and results in greatly reduced maintenance. The extra care and effort that goes into the manufacture of switches, frogs and special track layouts makes USS Quality Trackwork the finest you can buy. Specify USS Quality Trackwork for all your requirements.

For complete details on USS Trackwork, return the coupon below. Also, you are invited to contact our engineers at any time for assistance in design.

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FRISCO

Credits Maintenance Economies to SPERRY RAIL SERVICE

"With increased weights and speeds of modern trains, track testing and maintenance play a vastly more important part in efficient railroad operations," says Mr. E. L. Anderson, Chief Engineer of the St. Louis-San Francisco Railroad. "Increased maintenance costs demand maximum results from the appropriated dollar. We consider Sperry Rail Service testing as vital to economical maintenance as it is important to operating safety."

"Mechanization alone is not the key to savings in track upkeep," explains Mr. Anderson. "Personnel must be properly utilized. Our solution is through employment of the district-gang maintenance system. Territories of several section gangs are combined into a centralized district with heavy maintenance procedures performed by a single mechanized district gang."

"Laying of new rail is the function of a separate group operating on a separate budget. This organization has available all necessary power tools for performing such work." Mr. Anderson continues, "Supervisory responsibility for the efficient operation of these organizations is a centralized function of Frisco's Maintenance of Way Department."

"A sizable decrease in testing costs has been achieved by the coordination of Frisco's forces with SRS in spite of constantly rising labor and material costs. Annual testing programs, developed after careful study of territories to be tested, are designed to locate defects while of minimum detectable size. Our testing program has paid big dividends in reducing failures, avoiding derailments and permitting on-time train performance."

Sperry

FIRST IN RAIL TESTING

SPERRY RAIL SERVICE

Division of Sperry Products, Inc.
Danbury, Conn.
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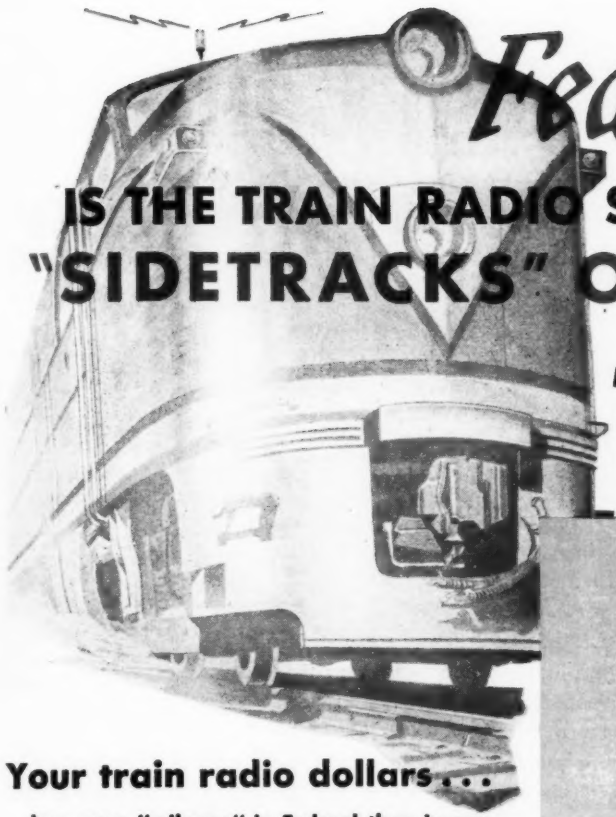
Continuous research and development provide positive assurance that Sperry detection methods and equipment are the most advanced. Another important Sperry contribution to railroad safety is the Ultrasonic Reflectoscope for in-place testing of locomotive and car axles, car wheels and other equipment. It locates internal defects before failure occurs. Call or write for further information.



Federal

IS THE TRAIN RADIO SYSTEM THAT REALLY "SIDETRACKS" OBSOLESCENCE!

Provides maximum economy through LONG life expectance that's backed by LASTING design efficiency!

Your train radio dollars . . .

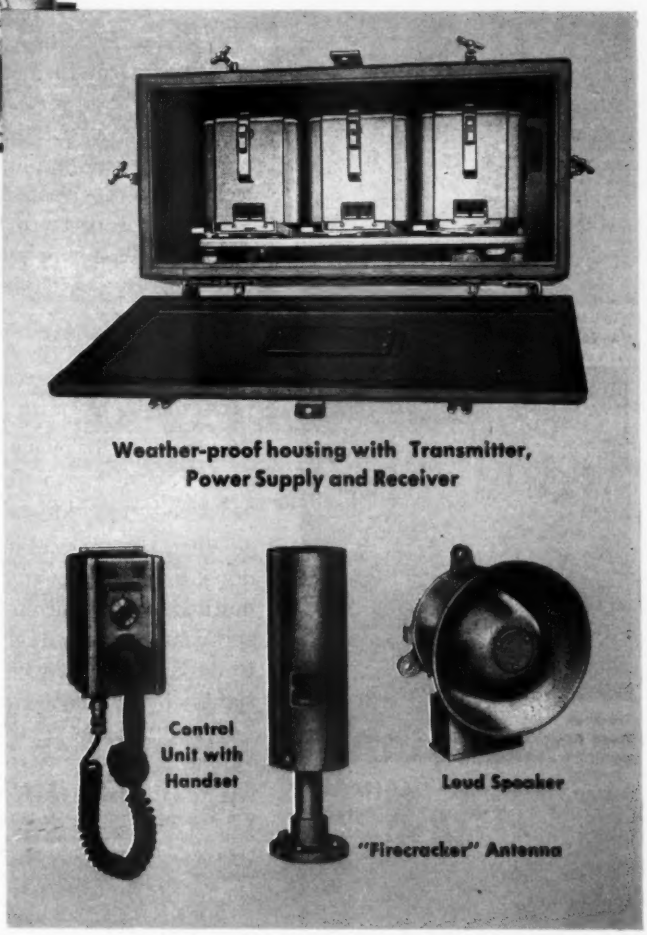
buy *more* "mileage" in Federal than in any other system. That's because Federal equipment is produced under a *rigid policy of avoiding unnecessary obsolescence!*

The newest Federal adjacent channel equipment, for example, can be plugged into and used in the *oldest* racks . . . with only minor wiring changes in the racks. No other supplier can offer this important economy.

Present receivers can be converted to split channel operation *in the field* . . . at a cost of only a few dollars for parts.

In ruggedness alone, Federal is without equal. Today, life expectance is better than 10 years. Even equipment that has been *flood-soaked* has been cleaned and dried and restored to service at small cost!

Get the facts today about the train radio system of proved-in performance and economy . . . Federal . . . the *pioneer* system that's standard equipment on leading railroads here and abroad.


Weather-proof housing with Transmitter, Power Supply and Receiver
Control Unit with Handset
Loud Speaker
"Firecracker" Antenna

For complete information write to Federal's Railroad Industry Sales Organization, Dept. P-186A

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Federal
FEDERAL TELEPHONE & RADIO FTR
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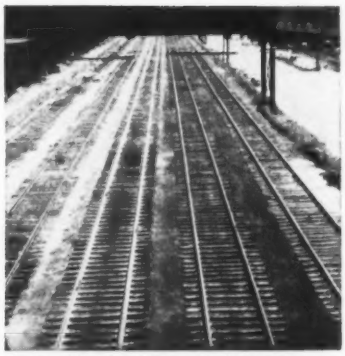
Weed and Brush Control lasts longer with Du Pont TELVAR® and AMMATE®

Weed Killers *Weed and Brush Killer*



"Telvar" has kept this yard clean of vegetation for two years.

Track at right was treated with "Telvar" Weed Killer. "Telvar" won't corrode equipment; it's non-flammable, non-volatile.

Area treated with "Telvar," left; untreated, right. "Telvar" is easily applied, extremely low in toxicity to humans and animals.

One application of "Telvar" solves weed problems for a season or longer!

"Telvar" kills through the roots . . . prevents regrowth. Low dosages (20 to 80 lbs. per acre) make it cost little for the results you obtain. Low rates also mean less handling, less storage facilities. If you're looking for a way to cut maintenance costs to new low levels, include "Telvar" in your weed-control program. Available in two formulations: "Telvar" W; and "Telvar" DW, which is especially suited for light, sandy soils and in areas where annual rainfall is higher than 20 inches.

"Ammate" kills more kinds of brush and keeps it down longer than most weed and brush killers!

When the original spray job is well done, brush is kept under control with nothing more than an occasional spot spray later. You can rely on "Ammate" to do the job safely, even where your rights-of-way adjoin crop land, because "Ammate" is not volatile. There are no vapors to drift onto sensitive crops.

FREE ILLUSTRATED BOOKLETS describe how to control weeds and brush with Du Pont chemicals. For your copies, write to Du Pont, Grasselli Chemicals Dept., Rm. D-4032, Wilmington, Del. In Canada—Du Pont Company of Canada Limited, Box 660, Montreal.

TELVAR® AMMATE®

Weed Killers *Weed and Brush Killer*

On all chemicals always follow directions for application. Where warning or caution statements on use of product are given, read them carefully.

DU PONT

REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Brush along right-of-way was controlled with "Ammate."

Maintenance crews prefer "Ammate" because they can use it without hazard to themselves, livestock, wildlife or adjoining crops.

Same right-of-way as above, three years after treatment. Brush still under control; low-growing cover returned to resist erosion.

1931 24 CONSECUTIVE YEARS 1955
MODERN BALLAST CONDITIONING

BEFORE *"R.B.C.C." Service*

AFTER *"R.B.C.C." Service*

"R. B. C. C." ballast cleaning service has earned its outstanding performance record from 24 years of successful operation. Our 3 and 5 unit trains are entirely self contained on our own standard railroad equipment—No railroad cars are used or tied up.

"R.B.C.C." 5 unit equipment does a thorough ballast conditioning job, cleaning two center ditches or two shoulders or one of each at one trip.

"R.B.C.C." 3 unit equipment, self propelled, does a thorough ballast conditioning job, cleaning one shoulder at one pass on one side only.

"R.B.C.C." ballast cleaning or excavating service, complete with our own personnel and equipment, is handled on contract basis.

RAND TOWER
MINNEAPOLIS, MINN.

METROPOLITAN BANK BLDG.
WASHINGTON, D. C.

"Mighty nice view since they used Chipman Brush Killer."

Chipman Chemical Company weed killers, brush killers and application service are backed by over 40 years of experience in serving railroads. An extensive line of weed, grass and brush killing chemicals is available to meet varying conditions. Included are the following:

Atlacide	Atlas "A" Arsenical
Chlorax	Atlas "D"
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TCA-Chlorax	Telvar W
Methoxone-Chlorax	Borax • Dalapon

Let us solve *your* weed problems with the *right* chemicals and application service.

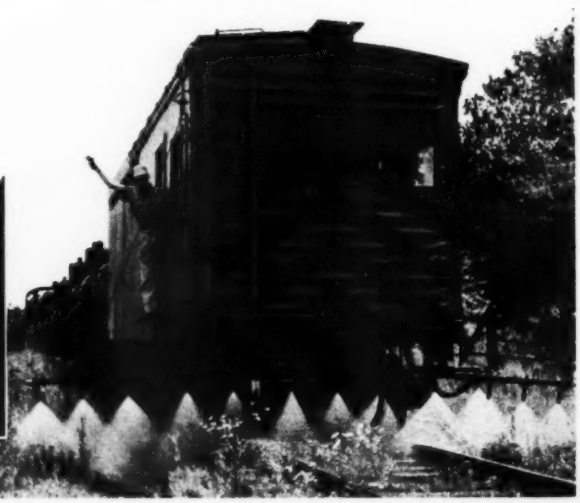
CHIPMAN

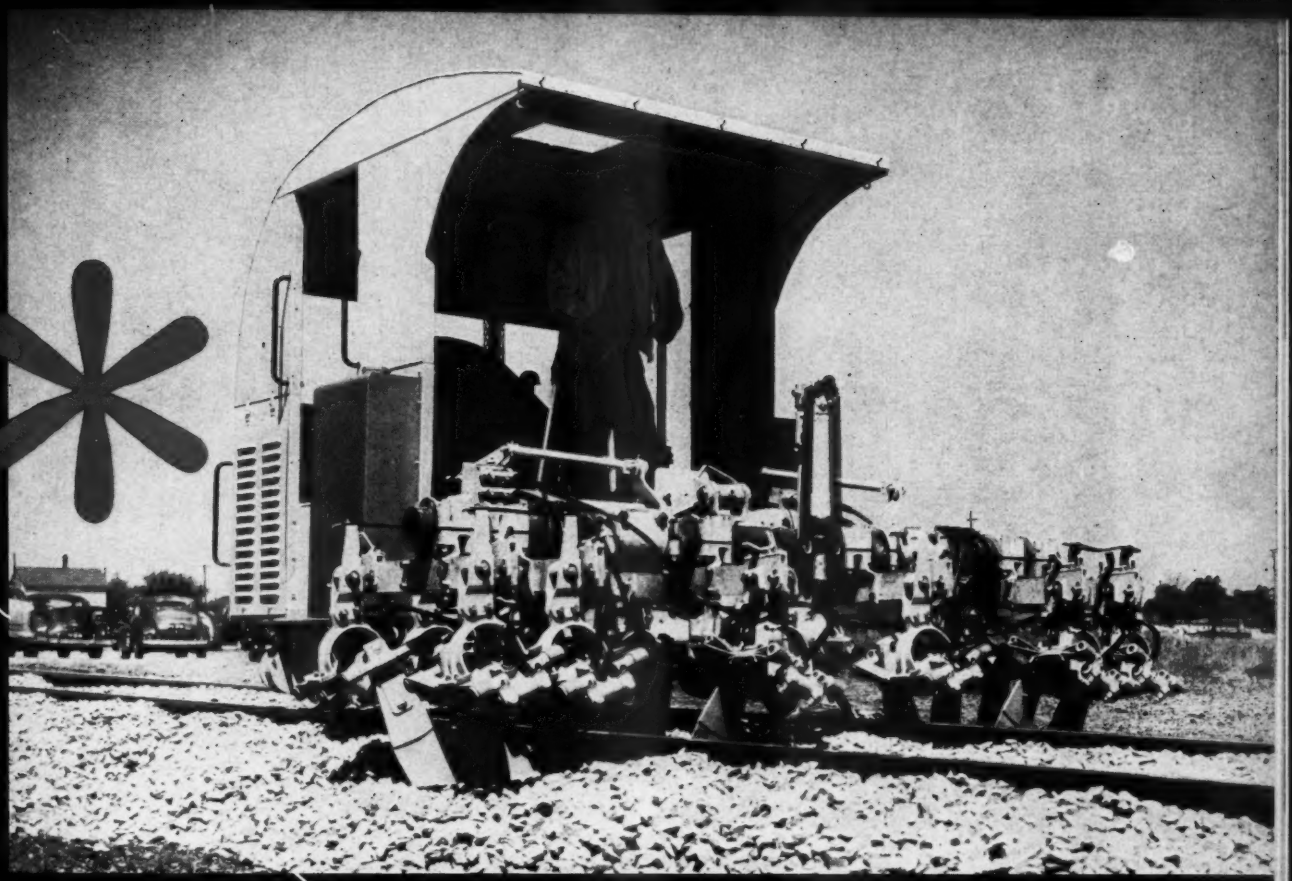
Chemical Company, Inc.

Railroad Div. Headquarters: 608 So. Dearborn St., Chicago 5

Executive Offices: Bound Brook, New Jersey

16 Strategically Located Chipman Plants





JACKSON MULTIPLE TAMPER

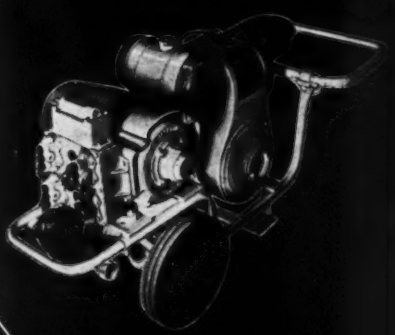
FOR 1956

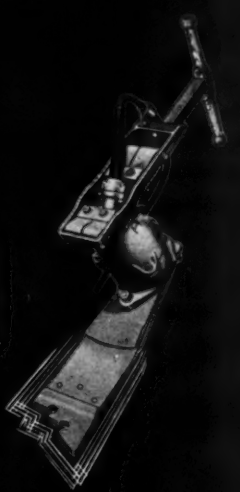
Unsurpassed for putting up track of finest uniform quality in any lift from moderately low to high. Initial cost is far less than any other on-track tamper.

JACKSON HAND TAMPERS and POWER PLANTS

are ideal for low lift and smoothing work with small gangs using 2 to 4 tampers — excellent for major ballasting or out-of-face operations since 2 or more outfits may be grouped as required. Quickly interchangeable blades make them extremely versatile and efficient on every type of application.

Model M-22 Power Plant serves 2 to 4 tampers, is thoroughly reliable, easily portable. Also serves well for lighting, emergency signaling and operating other power tools.





MFD. BY JACKSON VIBRATORS INC. LUDINGTON, MICH.

ELECTRIC TAMPER & EQUIPMENT CO.

LUDINGTON, MICHIGAN

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Trade-Mark

New materials, changing structural requirements, and unexpected emergencies create railroad problems that demand skill and experience . . . LINDE's coast to coast organization of engineers, service representatives, and salesmen in the offices shown on this map, stand ready to help you meet all such problems.

Backed by more than 40 years of accumulated know-how, and equipped with unmatched research and engineering facilities to help customers solve metal-working problems, LINDE is helping the nation's railroads to consistently improve production and lower costs.

These are "PLUS" values you get only from **LINDE**

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Linde Air Products Company

A Division of Union Carbide and Carbon Corporation

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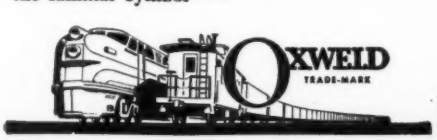
Division of Union Carbide Canada Limited, Toronto
(formerly Dominion Oxygen Company)

"Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

Supplying to railroads the complete line of welding and cutting materials and modern methods furnished for over forty years under the familiar symbol - - -



Your best defense against weeds on tough terrain... **Concentrated BORASCU®**

© PCB CO.

Why have more roads chosen BORASCU Weed Killers than any other to end their weed hazards about timber structures, yards and sidings? Is it because of its safety and ease of application? True, the granular form makes hand-casting quick and easy wherever a man can walk. There is nothing to mix—no water to haul. It is nonpoisonous, nonflammable, and noncorrosive to ferrous metals.

But the initial low cost of BORASCU is important, too. Actually, *Concentrated* BORASCU furnishes a greater amount of plant-destroying ingredient than any other sodium borate herbicide—at lowest delivered cost—so the economy is great.

Yet we like to think BORASCU's popularity is due primarily to the dependable long-lasting results it so safely provides. For instance, the photo shows a weed-free condition after more than 18 months since being treated with *Concentrated* BORASCU!

Why don't *you* investigate this reliable weed-and-grass killer? Write today for descriptive literature. If after reading the details, you would like to see what *Concentrated* BORASCU can do, just say so. We'll arrange a demonstration for you on your road—under your conditions—without charge or obligation.

AGRICULTURAL SALES DIVISION

PACIFIC COAST BORAX CO.

DIVISION OF BORAX CONSOLIDATED, LIMITED

630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

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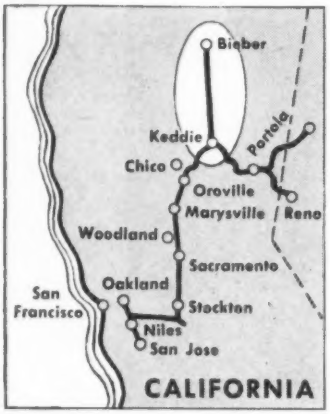
MADE BY THE MANUFACTURERS OF FAMOUS "20 MULE TEAM" PACKAGE PRODUCTS

How the Western Pacific
cuts delays from slides in the mountains



Western Pacific Railroad Company, San Francisco, Calif., operates 1,528 miles of road in California, Nevada and Utah. This includes a 110-mile secondary main-line from Keddie, Calif., to Bieber which provides, through its connection with the Great Northern, a route to the Pacific Northwest known as the "Inside Gateway."

Because much of the line is benched-in on the side of the mountains, it is subject to earth slides during the rainy season and snow slides in winter. For fast emergency slide-clearing service one of the units they have depended on since 1949 has been a 19 mph rubber-tired Tournatractor. This tool is ideal for their purposes since it can drive to the job under its own power and work in very restricted quarters.

Does job of work train

On the job pictured here, Tournatractor was working with a Manitowoc shovel and a small scaling crew trimming a large earth movement which threatened the tracks between Keddie and Moccasin Station. First, a fill of earth or gravel is laid between the rails to protect the roadbed. The slide is then blasted into small fragments which the tractor and shovel remove and drop into the valley below.

Prior to adopting "off-track" operation and the purchase of necessary equipment to effect this change, the railroad used a fully-equipped work train and crew to handle slide clearing jobs. It often took 2 hours time just to get the work train onto the main-line. Further time was lost travelling to the site. Train schedules were delayed. Because the line is mainly single track, no traffic could go through until the work train pulled into a siding, which might be several miles away.

Drives on roadbed to next job

Tournatractor, on the other hand, if within a reasonable distance, drives to a slide under its own power and is at work on the job within as little as 30 minutes after slide occurs. Straddling the rails, Tournatractor drives over bridges and trestles, through tunnels. As soon as a slide is cleared from the rails, revenue traffic can roll with little or no interruption to Tournatractor's work. Big rubber tires do not loosen rails or chamfer ties.

Running on rubber at speeds to 19 mph, Tournatractor has three times the speed of a comparable crawler-tractor. In addition, it can travel along the ties, or cross tracks, without planking.

By angling Angledozer blade to the right, Tournatractor operator is able to windrow blasted rock. For ditching or shaping slopes, either corner of blade can be raised or lowered.

When shovel became disabled, 186 hp Tournatractor pulled the excavator away from the danger of slides. To turn shovel-crawlers in direction of travel, Tournatractor operator nudged them around with dozer blade.

Foreman Jack H. Jones states that nothing but a rubber-tired tractor could work where Tournatractor does. "We can drive Tournatractor any place it's needed on this railroad," he says.

Railroad owners like Tournatractor because it doesn't interfere with train schedules, gets to the job sooner, and completes it faster. Besides it saves money . . . on the Western Pacific, Tournatractor and scaling crew can work for several days for a total cost of less than the expense of calling out a work train for one day.

Because of this saving in money and time, the Western Pacific bought another Tournatractor in 1951. This second unit usually works on the mainline in the famous Feather River Canyon. Both machines have been down for servicing and repairs less than 5% of scheduled working time.

Write for details

Tournatractor is a dependable product of the earth-moving subsidiary of Westinghouse Air Brake Company. Ask us for all the facts so you can compare this rubber-tired tool with your present off-track equipment. It can make important savings in time and money on your line!

Angledozer — Trademark Reg. U.S. Pat. Off. Tournatractor—Trademark T-701-RR

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Tournatractor pushed several tons of rock over the bank. Says Operator Allen LeCone, "For clearing a slide on a railroad in a hurry, this Tournatractor can't be beat."

T-701-RR

FREE...

"The Railroad Handyman"

20-page book shows how the 7-yd. self-loading D Tournapull cuts time and costs on right-of-way maintenance. Send coupon for your free copy. No obligation. Also ask to see our color movie, "Clear the Track."

Name ..... Title .....

Division .....

Railroad .....

Address .....

WORKS IN TUNNELS! *Yes, the Railroad Gradall not only negotiates any tunnel that a train can, but its* arm-action *boom and low clearance permits working inside tunnels.*

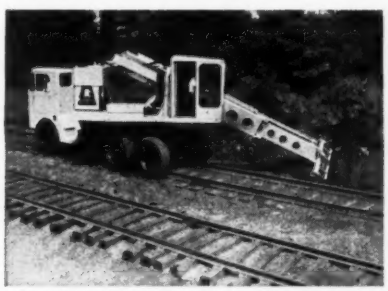
CLEARING ROCK SLIDES, *repairing wash-outs, and other emergency work is a natural for the Railroad Gradall. It can take the shortest route—either highway or right-of-way — to reach the job in a hurry.*

DRIVES RIGHT OVER TRACK OR ROUGH TERRAIN. *Oversize track-climbing tires and power steering make it easy to drive on or off the track, to select the best possible working position for any job.*

GRADALL® takes over many different jobs!

● Over *every mile* of your right-of-way — wherever maintenance or emergency service is required — you can have a Railroad Gradall at work in a hurry! And this single, versatile machine, carrying its own quickly interchangeable attachments, handles a wide variety of work —jobs like those listed below and many others—quickly, with arm-action accuracy, and *economically.* You'll find that a Gradall gives you *more working hours* each day, all year long! For a field demonstration of the Gradall right on your own work, write The Warner & Swasey Company, Gradall Division, Cleveland 3, Ohio.

NO TRAFFIC INTERRUPTIONS. *With the Railroad Gradall on the job, you can get off the track quickly. As shown here, there is also ample clearance between trains and the Gradall even when it is not straddling the track.*



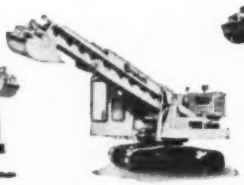
LONG REACH FOR OFF-TRACK WORK. *The Gradall's telescoping boom reaches a full 24 feet for work — 36 feet with boom extension. The "arm" and "wrist" action of its boom and bucket permit working to ¼-inch accuracy, if desired.*

NOW — One machine does all these jobs!

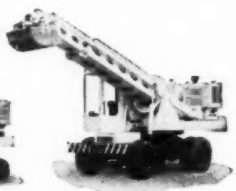
- Cleaning track
- Trenching and backfilling
- Maintaining ditches
- Sloping, grading, excavating
- Laying and aligning rails
- Installing crossings
- Repairing roadbed and distributing ballast
- Emergency work
- Placing culverts, signals, etc.
- Hand finishing and cleanup

NOW ALSO AVAILABLE

GRADALL— STANDARD CARRIER



CRAWLER-MOUNTED GRADALL



SELF-PROPELLED GRADALL

Gradall DIVISION OF WARNER & SWASEY Cleveland PRECISION MACHINERY SINCE 1880

Distributors in over 75 principal cities in the United States and Canada

YOU CAN DO IT BETTER, FASTER, FOR LESS WITH A GRADALL

Super Mole cleans 800-2400 fph with TIMKEN® bearings handling worm drive radial and thrust loads

RAILWAY MAINTENANCE CORPORATION mounts the two digger head worm drives of its McWilliams Super Mole on Timken bearings to assure long life, trouble-free operations.

TO keep its McWilliams Super Mole cleaning 800-2400 fph without trouble, the Railway Maintenance Corporation mounts the two digger head worm drives on Timken® tapered roller bearings.

Timken bearings handle this tough job with ease. They take the thrust load imposed by the worm—plus the radial load—without special thrust bearings. That's because the tapered construction of Timken bearings enables them to take *any* combination of radial and thrust loads.

Dirt's a special bearing problem on this Super Mole. When the digging heads dig, they stir up clouds of it. But Timken bearings keep housings and shafts concentric making closures more effective. Dirt stays out—lubricant in.

Wear is negligible because the true rolling motion and incredibly smooth surface finish of Timken bearings practically eliminate friction. And because we're the only bearing manufacturer in the U.S.A. that makes our own steel, we're the only one that can control quality every step of the way.

To get all these advantages in the equipment you build or buy, always specify Timken bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

WE MAKE OUR OWN STEEL— AND IT'S NICKEL-RICH FOR SUPERIOR TOUGHNESS

We're America's only bearing manufacturer that makes its own steel. And we don't skimp on nickel in the fine alloy steel we make for Timken bearings. Our steel-making specialists use the exact amount needed to give Timken bearings the superior toughness necessary to withstand shock, last longer.

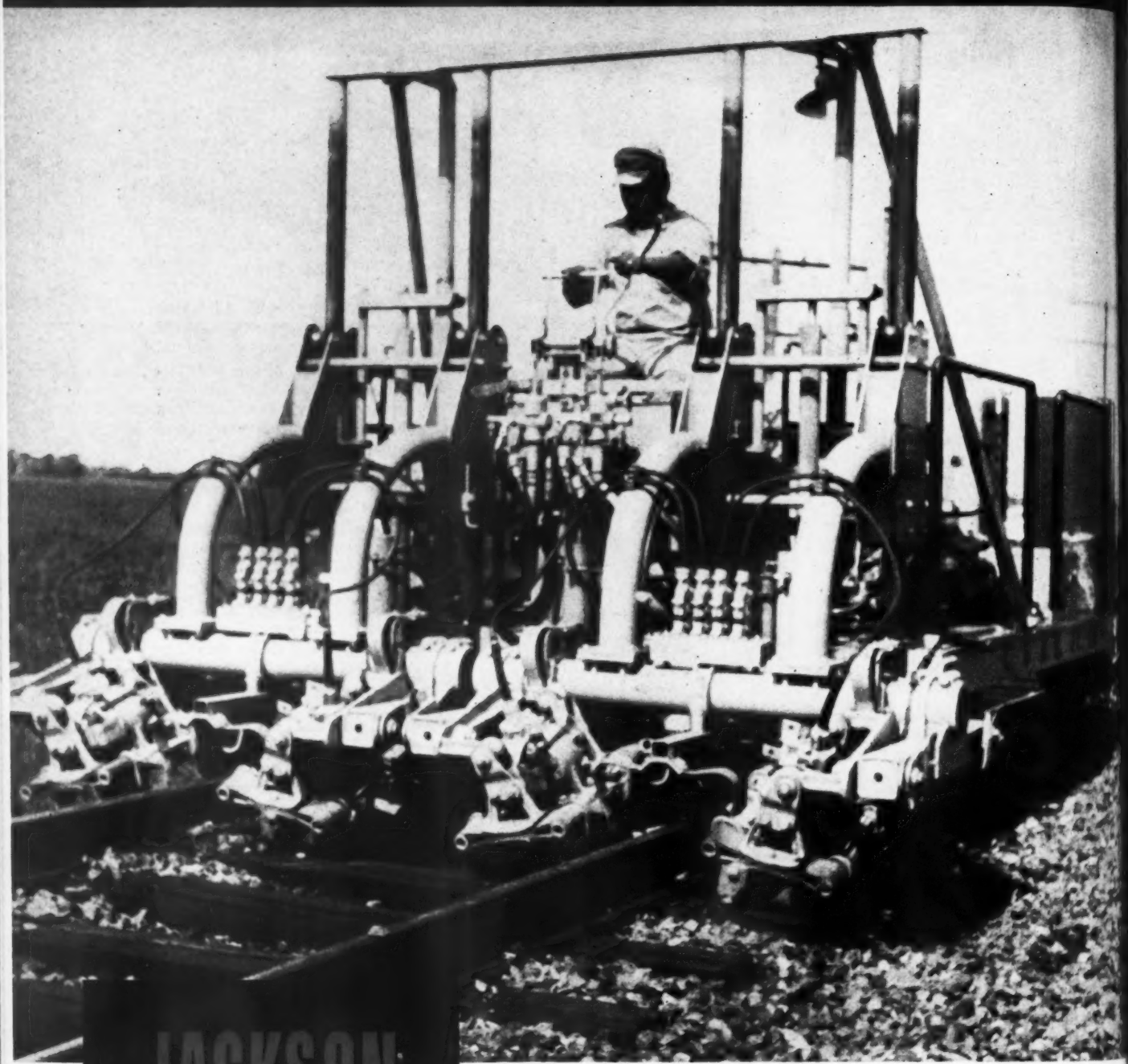
TIMKEN

TRADE-MARK REG. U.S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ▯ AND THRUST ⊣▯⊢ LOADS OR ANY COMBINATION ⊣▯⊢

Now-more than ever-your best bet for '56



JACKSON TRACK MAINTAINER

The 1956 model, now in production, combines major improvements to provide even greater speed and efficiency of tamping under all conditions . . . improvements such as: Much greater power . . . a highly practical means of directing every bit of vibration to the ballast . . . and other important features . . . all of which increases the already wide margin of superiority of this machine as the best means of both putting up and maintaining track of finest quality. By all means write, wire or phone for complete information concerning the JACKSON TRACK MAINTAINER. You're sure to agree, we believe, that it is by long odds your best bet for '56.

Acquirement plans to suit your needs.

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

346-ton load

PROOF

that Armco Culverts will carry your heaviest load

Under only 3½ feet of cover, this 72-inch diameter Armco Corrugated Metal Pipe safely withstands one of the heaviest wheel loads on record. Several times a day since 1927, a 346-ton steel thermos car charged with molten metal, rolls over the pipe.

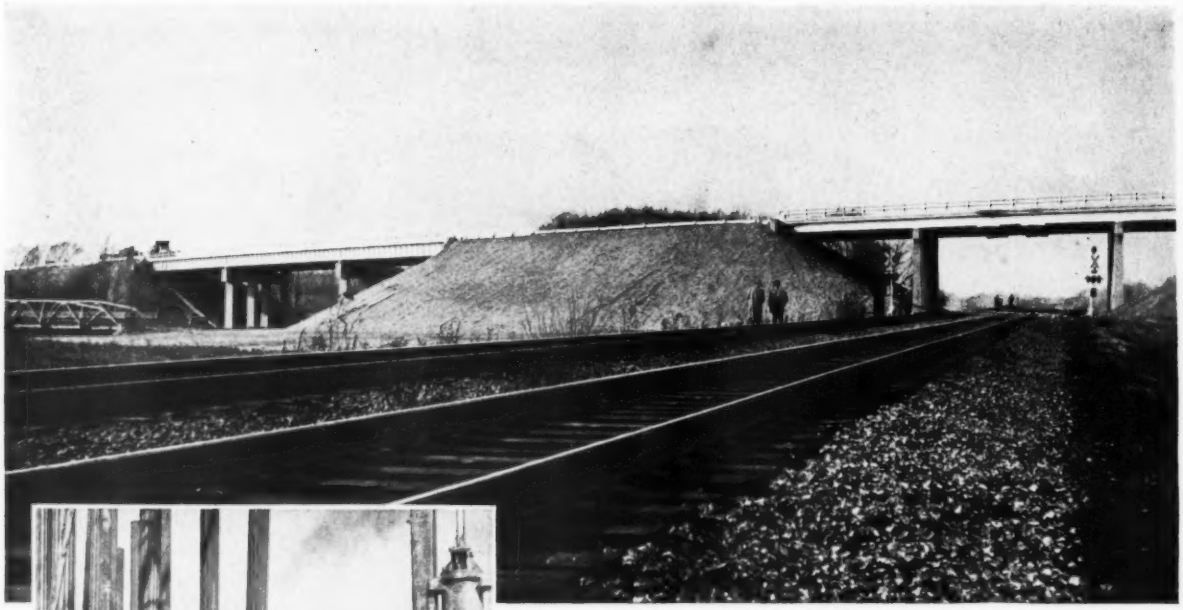
Today, the structure remains in excellent condition, with the promise of many more years of trouble-free service. Not one cent has been spent for maintenance since the structure was installed.

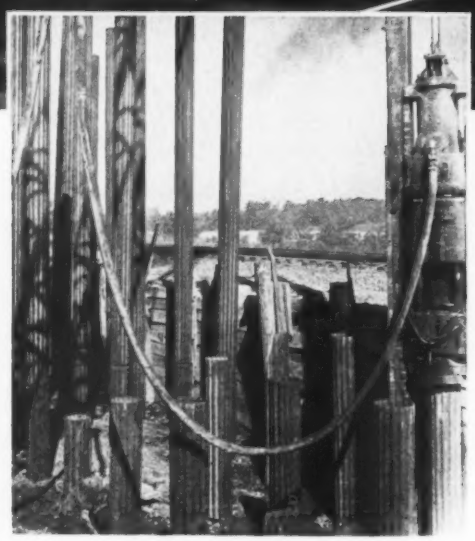
Flexible, corrugated metal design is one reason for the amazing strength and durability of Armco Structures. The load is distributed around the entire periphery of the pipe instead of being concentrated top and bottom as with rigid pipe. There's no danger of cracking or breaking.

To combat varying degrees of corrosion, protective coatings are available to assure ample material durability for every service condition. Plain galvanized pipe, like the structure pictured, is ideal for normal service. For severe corrosion, there is Armco ASBESTOS-BONDED. And where abrasive flow creates a problem, Armco PAVED-INVERT Pipe guards against erosion. Write us for complete information about durable Armco Drainage Structures. There is a size and type for almost every drainage need. Armco Drainage & Metal Products, Inc., 3595 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO DRAINAGE STRUCTURES

ARMCO®





Pile driving and extending under way for Ohio's two new Route 30 bridges (above) engineered by Bureau of Bridges, Ohio State Highway Dept. 286 eighty-foot Monotubes, with 8" tip and 12" butt diameter, were driven. General Contractor: The Lewis and Frisinger Co., Ann Arbor, Mich. Pile Driving Contractor: The Purdy Construction Company, Mansfield, Ohio.

Note the narrowness of this old bridge and the hazardous approach curve which have now been eliminated by Ohio's new Route 30 bridges.

MONOTUBES "go in" for faster, safer traffic and unmatched economy!

THESE new bridges at East Union, Ohio, on the heavily traveled Lincoln Highway, eliminate a triple threat . . . a small bottleneck bridge, a bad curve, and a hazardous railroad crossing. Both bridges are supported by rugged, cold-rolled Monotube foundation piles.

And speaking of eliminating threats, here's another case where Monotubes saved time and money by licking an unexpected problem. The piles had to go much deeper than anticipated, but due to Monotubes' simple field extendibility, the required penetrations were readily achieved using the same light crawler crane with which the job was started—no penalty for heavier equipment.

You stand to gain many other advantages with Monotube piles. Write to The Union Metal Manufacturing Co., Canton 5, Ohio, for Catalog No. 81.

UNION METAL

Monotube Foundation Piles

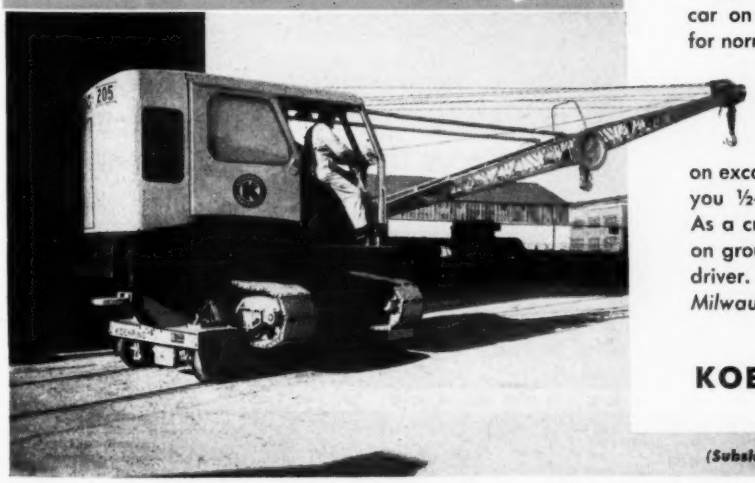
Works on or off the rail-propulsion car with all shovel or crane attachments

You get more productive work-time

because Koehring 205 saves travel-time . . . powers its own rail car

With Koehring 205 RailAid, it's not necessary to move off-track over round-about routes from one work section to the next. Self-powered RailAid travels on-track at speeds up to 20 m.p.h. . . . does 2 to 3 times the work of conventional excavators and cranes that have to crawl or be hauled from job to job.

You can send RailAid anywhere along the line at a moment's notice to do any digging, lifting or material-handling. It works on or off-track . . . cleans ditches, widens embankments, stock-piles coal or ballast, loads and unloads cars, repairs trestles, lays rails, does pile-driving, handles scrap or salvage.



It loads or unloads itself on ramp-equipped car in less than 10 minutes. Crane or excavator sets car on and off-track . . . clears the right-of-way for normal through traffic. Propulsion car has 2-axle drive, with airbrakes on all 4 wheels. Torque converter gives smooth control of 20 m.p.h. travel speed. Wide car-"well" accommodates 16, 20 or 24-in. crawlers on excavator or crane. Versatile Koehring 205 gives you ½-yard dipper capacity as a shovel or hoe. As a crane it safely lifts 6.9 tons from car, 8.9 tons on ground . . . converts to clamshell, dragline, pile-driver. For more facts, write: *Koehring Company, Milwaukee 16, Wisconsin.*

KOEHRING **RailAid®**

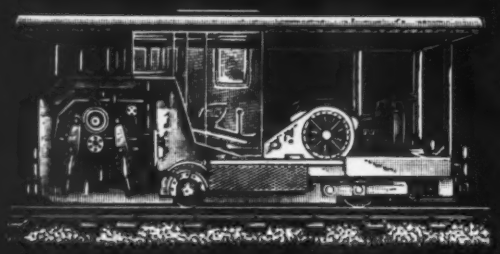
K454

(Subsidiaries: **KWIK-MIX • PARSONS • JOHNSON)**

FOR RAISING

Matisa

SELECTIVE DEPTH TAMPING



With vibratory compaction—Now at your budget level! The True tamping principle for surfacing or making high or low lifts.

OR

Matisa

UNDER-THE-TIE BALLAST CLEANING

The only ballast cleaner that does a complete job. Cleans (or excavates) ballast in cribs, under ties, on shoulders, between tracks. Improves clearance in tunnels and at O.H. bridges, lengthens cleaning cycle.

LOWERING TRACKS

Matisa

EQUIPMENT CORPORATION

1020 WASHINGTON AVE. • CHICAGO HEIGHTS, ILLINOIS

TRACKWORK SPECIALISTS ALL OVER THE WORLD

News Notes

. . . a resumé of current events throughout the railroad world

RAILWAY
TRACK and STRUCTURES
NOVEMBER, 1955

Barge operators will benefit—at the taxpayers' expense—from a new government-built Calumet-Sag channel at Chicago, linking the Great Lakes with the Illinois-Mississippi rivers, on which work is about to begin. Cost? Only $188 million, according to present estimates.

•

Estimated net income of Class I roads in August, after interest and rentals, amounted to $93 million as compared to $65 million for August 1954. Net income for the first eight months this year, was put at $582 million up $233 million from 1954's net of $349 million.

•

Railroads' rate of return is too low, says Commissioner Mitchell of the I.C.C. The Commissioner made this observation from the bench during oral argument on carriers' request for continuation of the Ex Parte 175 freight rate increases due to expire at the end of the year.

•

The "Speedwalk" conveyor belt system for transporting passengers from the Hudson & Manhattan station platform to the Erie's terminal at Jersey City, N. J., is credited with an "assist" in the H&M's showing of a 4½ per cent increase in passenger traffic at that point since the facility went into service.

•

Incidental intelligence: One of the larger institutional holders of the new nationwide rail travel credit card is, we understand, the Air Transport Association.

•

The Union Pacific and the Chicago & North Western have reached an agreement whereby through passenger trains operating over their lines began operation on October 30 over the Chicago, Milwaukee, St. Paul & Pacific between Omaha and Chicago instead of over the C&NW. This terminates North Western-Union Pacific-Southern Pacific operation of through trains between Chicago and the Pacific Coast, which has been in effect since 1889.

•

The suitability of atomic power as a means of propelling locomotives is a problem which the railway industry itself will have to determine. Sufficient advantages would have to exist that are not otherwise obtainable to justify the spending of money and use of manpower for such a development, according to a spokesman of the Atomic Energy Commission in a speech before a recent railway magazine editors' convention.

•

Ten years of "dome car" operation were celebrated by the Burlington last month. The first such car was put in service as an experiment in 1945. Now, with 24 dome-equipped trains running on its lines—some in conjunction with connecting railroads, of course—the Burlington has disclosed its intention of including dome equipment in its "Denver Zephyr," for which new cars are now on order.

•

Wage conferences over demands by "non-op" brotherhoods for a wage increase of 25 cents per hour were resumed October 12, after having been abruptly terminated on September 22. Concerning all wage cases currently under negotiation, Leverett Edwards, chairman, National Mediation Board, said that the prospects are good for early settlement of all pending wage cases. Since then agreement has been announced between the carriers and the Brotherhood of Locomotive Firemen and Engineers.

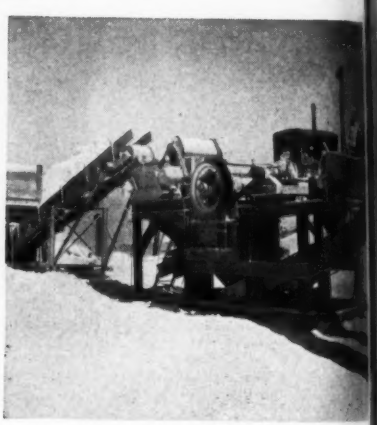
A PICTURE REPORT OF

INTERNATIONAL POWER *in action!*

Boosting job production everywhere

13 TD-24's for Nello Teer—Most of the tractor work on their 4.98-mile, 3,065,000-yd. $4,306,000 section of the Massachusetts Turnpike is being done by these 161 dhp crawlers. Four with scrapers combine to average 327 twenty-yard loads daily on 1500 ft one-way hauls. Others tow rippers, push-load scrapers, or clean up around Teer's two 2½ and 4-yd shovels and 10 haulers.

"1/3 more overburden daily than competitive crawlers" . . . that's the report from Merkli Brothers Coal Company, Beaver, West Virginia, on their International TD-24. Unit is stripping 40 feet of sandstone and shale to uncover a 12 to 51-inch coal seam. "It has better balance and visibility than other tractors," says Partner Henry L. Merkli. "It costs less to maintain; takes less time to grease, too."



Crushes gypsum—Near Avenal, Calif., Superior Gypsum Company's International-powered crusher produces 300 tons of gypsum per 8-hr. day. Material is used to neutralize high-alkali irrigation water.

1 more trip hourly—Fast loading and acceleration help 18½-yd. Payscraper make one more trip hourly than other self-propelled scrapers used by W. E. O'Neill Construction Company, Gary, on their 2½-mile, 700,000-yard Indiana Turnpike section near Gary. Cycle length averages 2½ miles; material is mostly sand.

80 ft ditch in 3 hours—Excavating for water main in Henderson, Texas, International "300" wheel tractor dug 100 cu yds of clay hourly. Backfilling was handled by rig's front-end loader. Ditch is 4 ft deep, 22 in. wide.

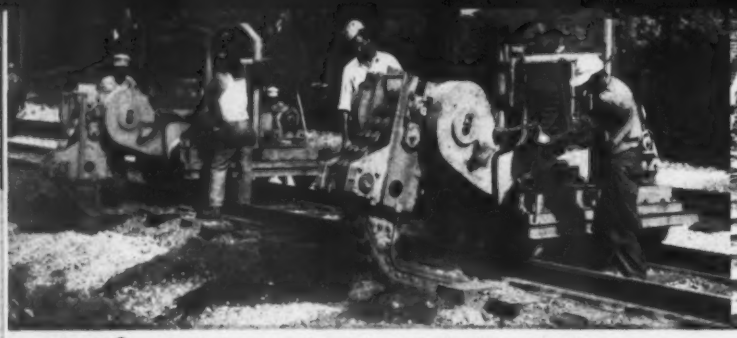
"We saved 100 man-hours by lifting zonolite roofing slabs with our International-Drott TD-6," reports M. G. Aldrich, Macon, Georgia, on the 13,000 sq ft building job shown. Lifts of 1 ton were made to 10 ft eave height.

Rugged in rugged rock—"TD-6 is ideal for opening underground mines," says Malcolm McDonald of Kiabob Uranium Corp, Green River, Utah, "It gets around fast in narrow tunnels, yet brings out big loads."

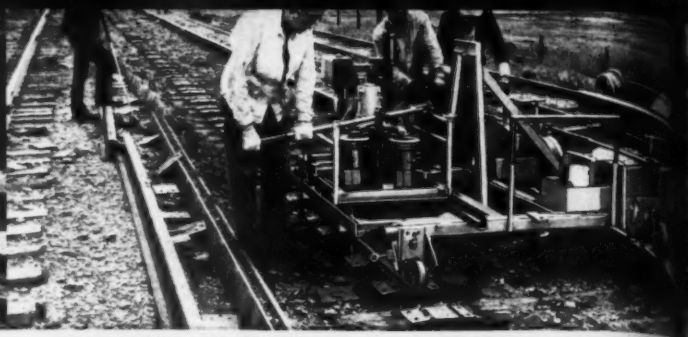
International Industrial Power

INTERNATIONAL HARVESTER

A machine size for every job . . . see your nearest INTERNATIONAL DISTRIBUTOR for details.



CRIBEX® . . . Employing an endless chain of digging flights, the Cribex removes material contained in the cribs and deposits it beyond the ends of the ties. It leaves a smooth and uniformly graded crib floor, completely emptying crib without damage to ties or rails.



DUN-RITE® GAGING MACHINE . . . Fast and accurate, the Dun-Rite base gaging method fastens the tie plates to the tie in exact position so that when the rail is placed the head to head gage is correct.

in 1956 . . .

make your track maintenance dollars go farther by lowering costs with NORDBERG MACHINES

For improved track maintenance in 1956 . . . these are the Nordberg *"Mechanical Muscles"*® you need to do the *best quality* job . . . *faster* . . . at *big savings.*

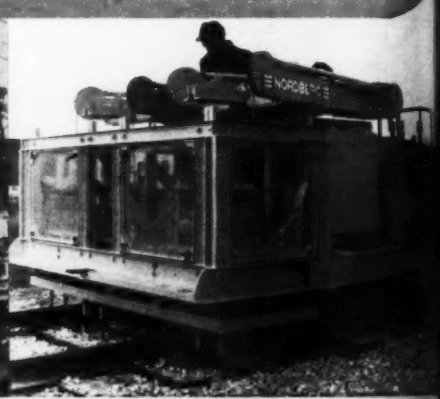
Investigate the full line of Nordberg track maintenance machinery which has been designed, built, fully tested and proved in use with the cooperation of railroad men. These machines have revolutionized track maintenance methods in scores of operations. Write for literature giving complete details on any or all of these *"Mechanical Muscles"*.

© 1955, Nordberg Mfg. Co. R1355

HYDRAULIC SPIKE PULLER . . . Simple, versatile machine for tie removal, switch and bridge timber jobs—quickly and economically pulls spikes on either rail.

GANDY—TIE PULLER AND INSERTER . . . A multi-purpose self-propelled, on-track machine that pulls old ties—inserts new ties—loads old ties, sets machines on or off track—hauls and distributes new ties.

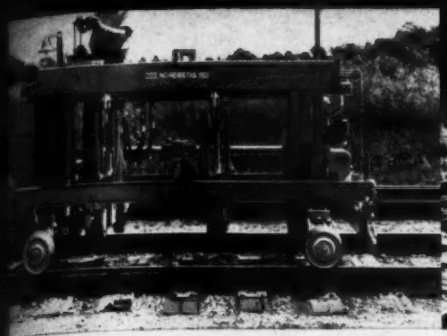
SPIKE HAMMER . . . A power machine that drives spikes straight and to correct depth. One machine can drive 800 spikes per hour.



AUTOMATIC GANG TAMPER . . . Operated by one man, this machine assures uniform quality tamping of every tie, every time, in any ballast, whether raising or spot surfacing.

DSL® YARD CLEANER . . . A self-contained, self-propelled machine that cleans more track faster, better, more economically . . . without damaging ties.

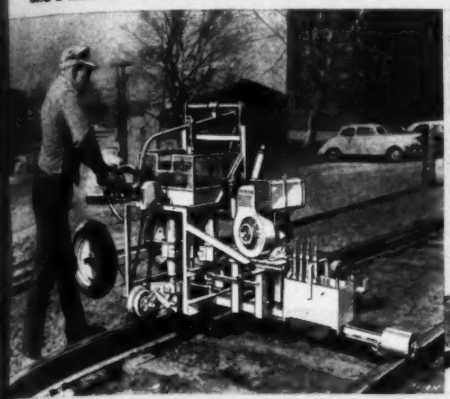
NORDBERG MFG. CO.



TRAKLINER . . . A self-propelled machine for faster, more accurate track lining in raising, spot surfacing, new work or improvement programs. One man and a machine do the work of 14 men or more.

BALLAST ROUTER . . . Easily and quickly removes high crib ballast, improves track drainage, and simplifies application of rail anchors.

ADZING MACHINE . . . Properly prepares tie seats in keeping with today's track maintenance standards. Adzer is easily operated and adjusted without tools. All tie seats are uniform and in same plane.



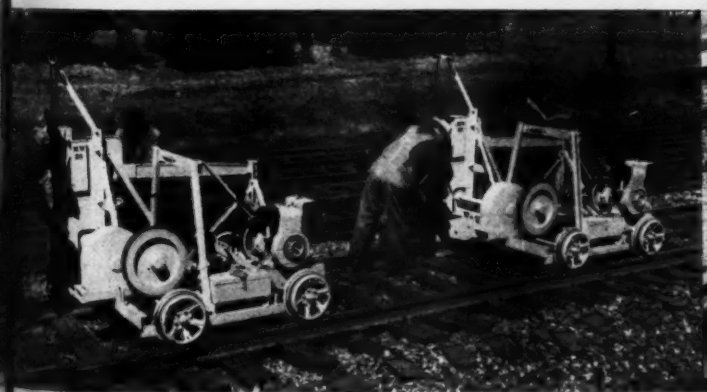
TIE DRILL . . . For speeding rail laying, reducing field tie drilling costs and increasing life of ties . . . drills 2 holes at once in less than 3 seconds per hole.

POWER JACK . . . Speed, accuracy and ease of handling on or off the track are advantages of this machine for reballasting, general surfacing and all other operations involving raising of track.

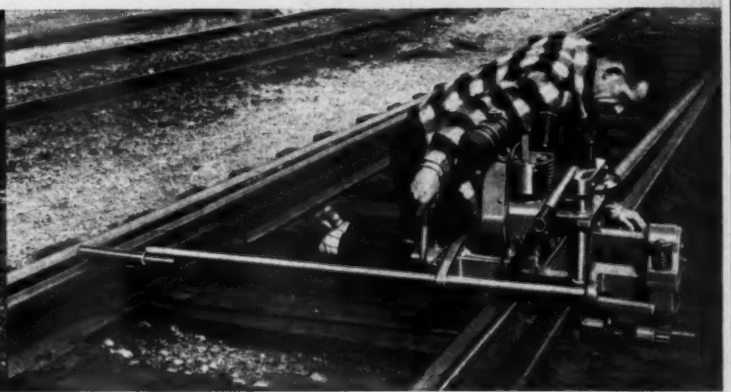
POWER WRENCH . . . Provides uniformly controlled tightening of track bolts. Machine is operated by one man and is ruggedly built to take hard service, yet light in weight to be easily handled off and on the track.

BALLASTEX®—SCREENEX® . . . A fast, economical machine combination that excavates ballast between tracks or on shoulder, cleans and returns it to track, intertrack, or shoulder.

RAIL GRINDERS . . . For reconditioning rail, switches, frogs and crossings, Nordberg builds four types of grinders. In this selection you will find the grinder best suited to your requirements.



MECHANICAL SPIKE PULLER . . . Three men and machine easily pull from 30 to 45 spikes per minute, speeding up relaying and reducing the cost of the entire operation.



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to higher efficiency & service with 2-way radio

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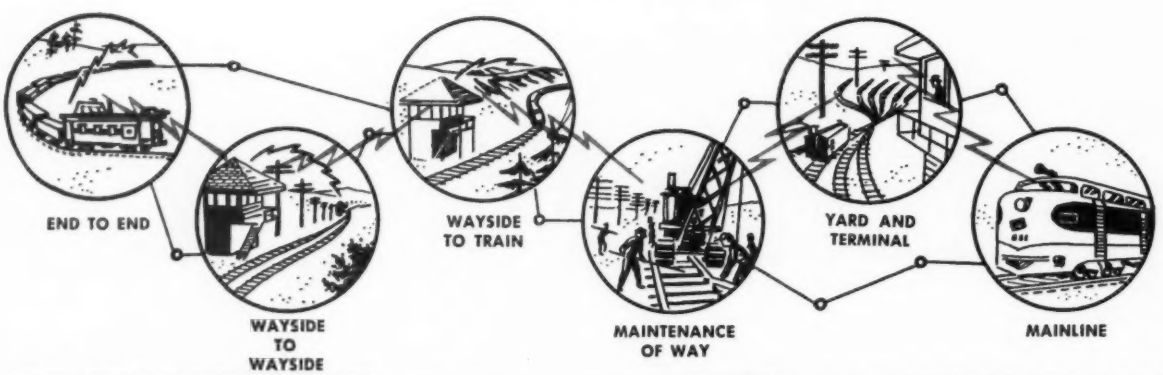


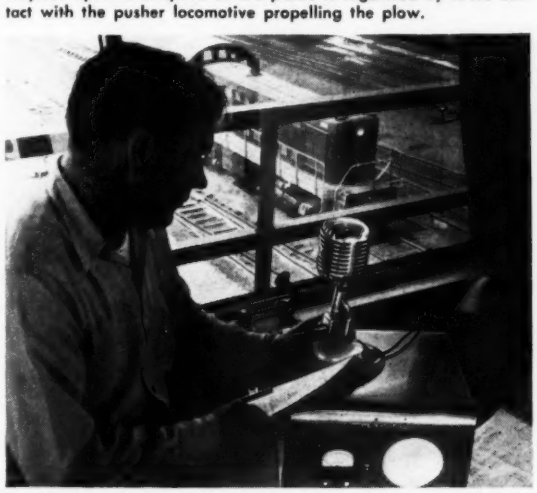
The vast radio system of the Southern Pacific railroad covers every mainline operation. All passenger engines are equipped to enable them to contact the wayside operators. Freight locomotives and cabooses have end-to-end communication as well as contact with wayside operators.

The Southern Pacific Radio System includes three Mainline Radio operations, with dispatchers positions, similar to this picture, at Sacramento, Calif., Dunsmuir, Calif. and Eugene, Ore. In these districts, it is possible for the dispatcher to utilize radio to assist in movement of trains under his jurisdiction.

One of Southern Pacific's radio stations at Norden, Calif., a typical "trouble spot" in the mountains where heavy snowfall is an annual occurrence. This is part of the Maintenance System from Sacramento to Reno.

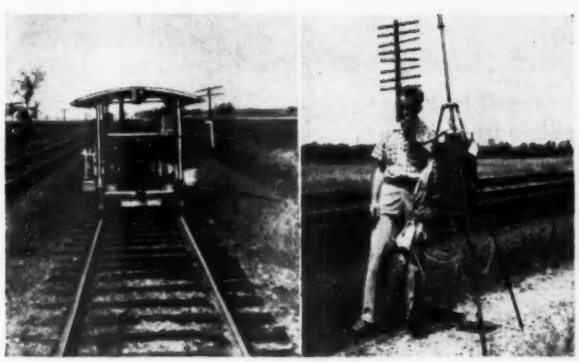
Southern Pacific operator at Norden snowshed near the Donner summit of the Sierra Nevada mountains, can use radio to talk with other stations or his dispatcher in emergencies, or with trains and snow clearing equipment equipped with the mobile radios. Beyond the window can be seen the front of a rotary snowplow awaiting orders to proceed out into the storm.

Radio enters the fight against snow. In both the Cascades and the Sierras, snow plows are radio equipped for constant contact with wayside operators. Speed of the plows is regulated by radio contact with the pusher locomotive propelling the plow.



The Southern Pacific has extensive yard and terminal radio installations all over the system. Radio finds application in car checking and inspection as well as switch engine direction. Less time lost in yards and better customer service are just a few of the dividends.

Radio on a motor car is one of the latest installations on the Southern Pacific. Not only does this make for safer operation for motor car personnel, but the ability to reach the maintainer improves his operation.



Use of radio in maintenance of way operations is saving time every day on the Southern Pacific. Communication by radio produces better utilization of the "on track" gear and fewer train delays.

MOTOROLA

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RAILWAY
TRACK and STRUCTURES

Subject:

Dear Readers:

Purposeful Reading

Has it occurred to you there is a great deal of difference in the manner in which different magazines are "read?" Perhaps you haven't given the matter much thought, and for this reason you may be interested in having the ideas of a magazine editor. An editor is naturally going to be interested in the subject, for he knows if his product isn't "read" in the right way he somehow is not doing the job he should for his magazine, his readers and the advertisers.

Think of your own reading habits. In your perusal of newspapers and some magazines you doubtless do a great deal of scanning, noting the headlines and titles, glancing at the pictures and flipping the pages in quick succession. With other magazines, you probably take more time, reading and studying the articles, or at least some of them, in greater detail. When you read with such deliberation, you are doing so for one of two reasons: (1) Because you find the material entertaining; or (2) because it is useful to you in some aspect of your life. It is always possible, of course, that the two factors will go together.

It is not the basic aim of a magazine like *RT&S* to be entertaining although this does not mean that reading it should not be a pleasant experience. Its purpose is to provide readers with useful information, presented in a palatable form. If the material selected for publication in the book is such as to be useful to you, and if it is presented attractively, then you are going to be drawn into reading much of it in detail. In that case you are doing more than just reading the magazine; you are using it as an instrument for self-betterment and to do a better job for your employer.

We know that many of you are using *RT&S* in this manner. Formal readership surveys we have made bring out this point very strongly. Also, it shows up in less formal ways. For instance, we know of a number of supervisors and division engineers who write letters to their foremen about each issue calling attention to specific articles and asking for comments about them.

Railway supply men have noticed this, too, and have commented on it to representatives of our own advertising sales department. In their visits to your offices they have apparently observed that many of you keep the current issues handy and that you have cause to use them from time to time. They are impressed by the fact that, for many of you, reading this magazine is not merely a matter of thumbing through it and laying it aside, or consigning it to the reception room, but of making it an integral part of your office equipment.

You see now what I mean about the different ways in which magazines are read. To be successful it is not enough that a trade journal be read as you would a popular magazine, rapidly and superficially; only when it is read and reread, and then passed along for the use of others, does it become of maximum benefit to the subscriber and the advertiser. MHD

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Special Services by Roycraft

27 Years' Experience

- Designing
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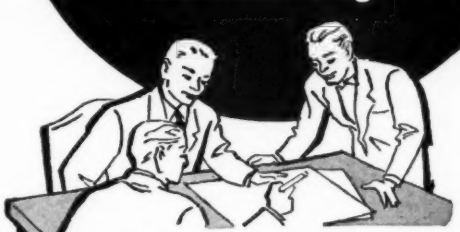

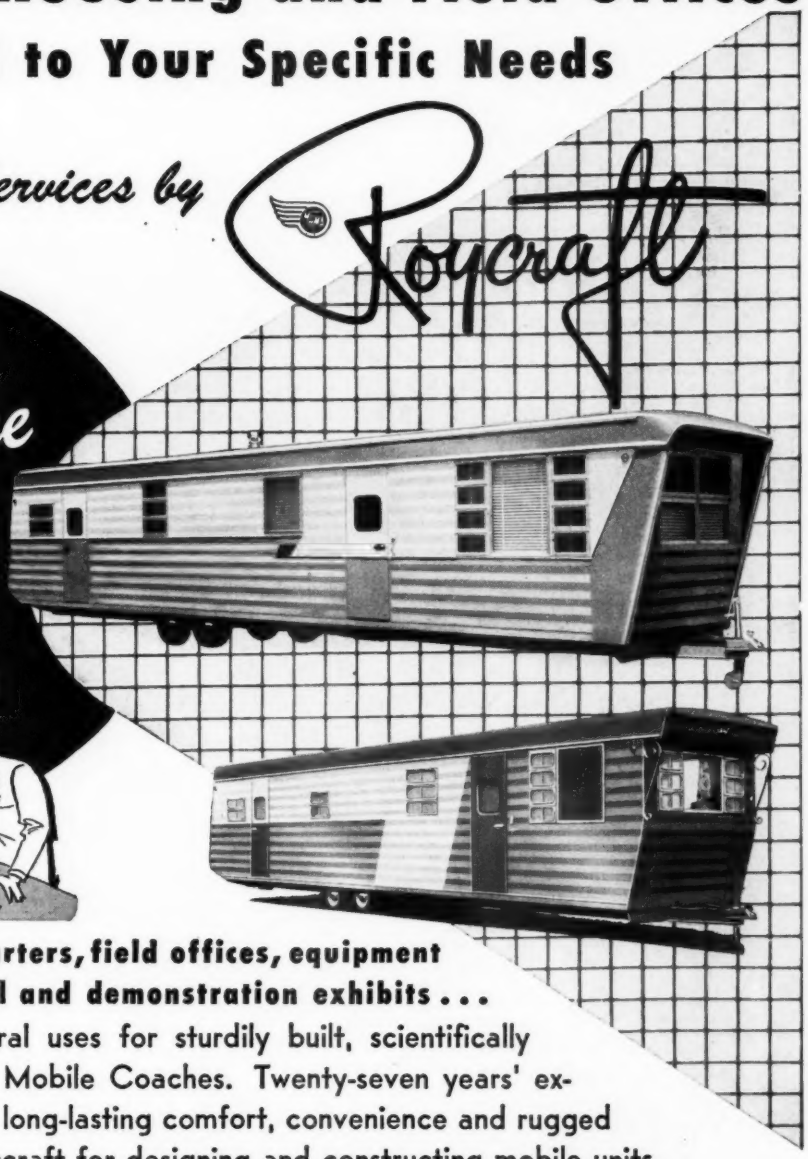

Mobile housing quarters, field offices, equipment centers, educational and demonstration exhibits . . .

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Our equipment Research discloses many unusual applications, innovations and special sources for modern devices.

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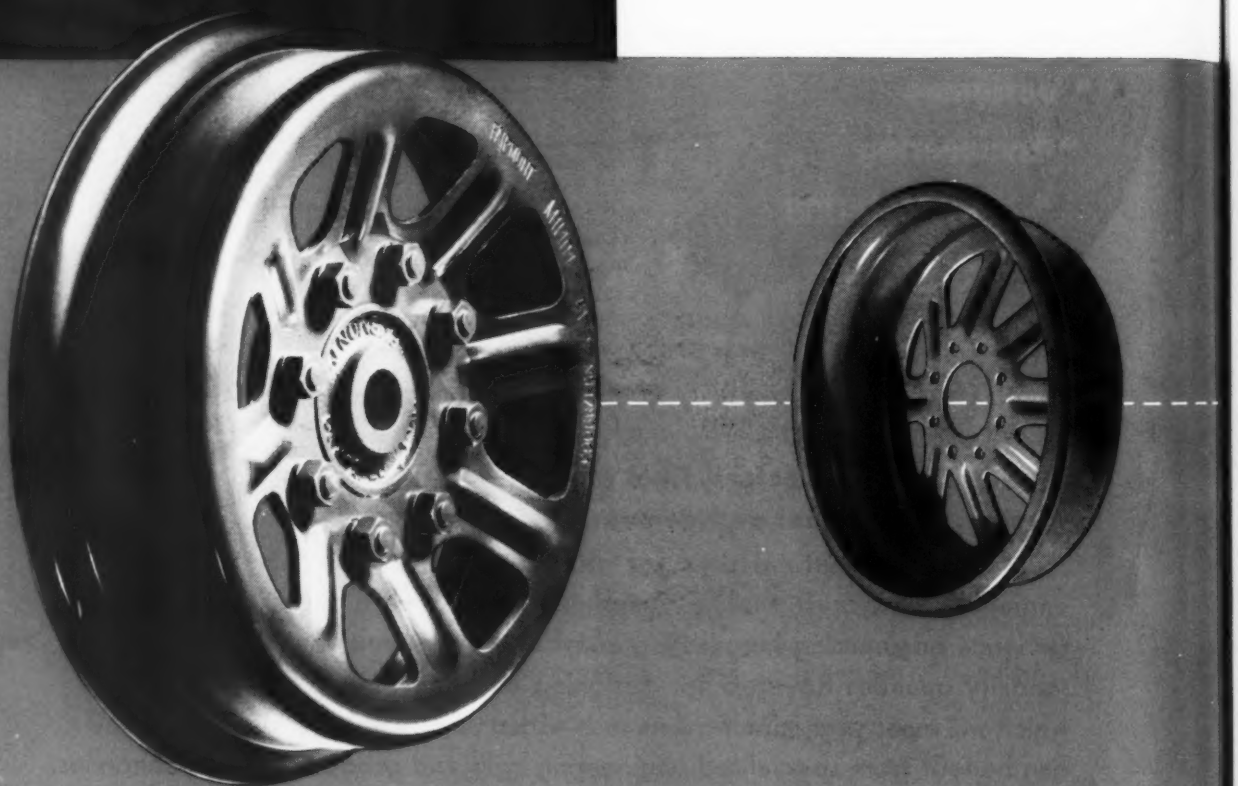
When you think of

DEMOUNTABLE WHEELS

. . . think of

Fairmont



It is true, of course, that there are many Fairmont products which are more dramatic in their appearance and use than the one pictured above. But certainly none more fully represent Fairmont's leadership in design or its quality of construction. To begin with, the Demountable Wheel is an exclusive Fairmont development—introduced by Fairmont to the railway industry over two decades ago. And as Fairmont introduced it, so has Fairmont shown the way in its subsequent design and development. Today, the Fairmont design is still the standard for the industry, as selected by the American Railway Engineering Association. The Fairmont Demountable Wheel is deliberately built to the highest standards that can be enforced on its production—and is cold-formed with extra thicknesses at all points of wear. Every step of its manufacture, from the purchase of materials to the final inspection, receives the closest care and scrutiny. So the next time you think of demountable wheels—think of their originator and largest producer. Think of Fairmont!

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27 Years' Experience

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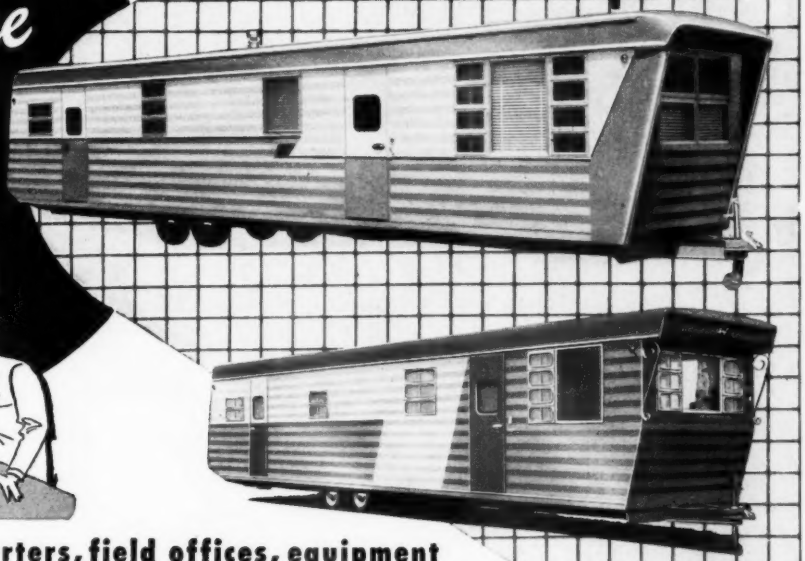

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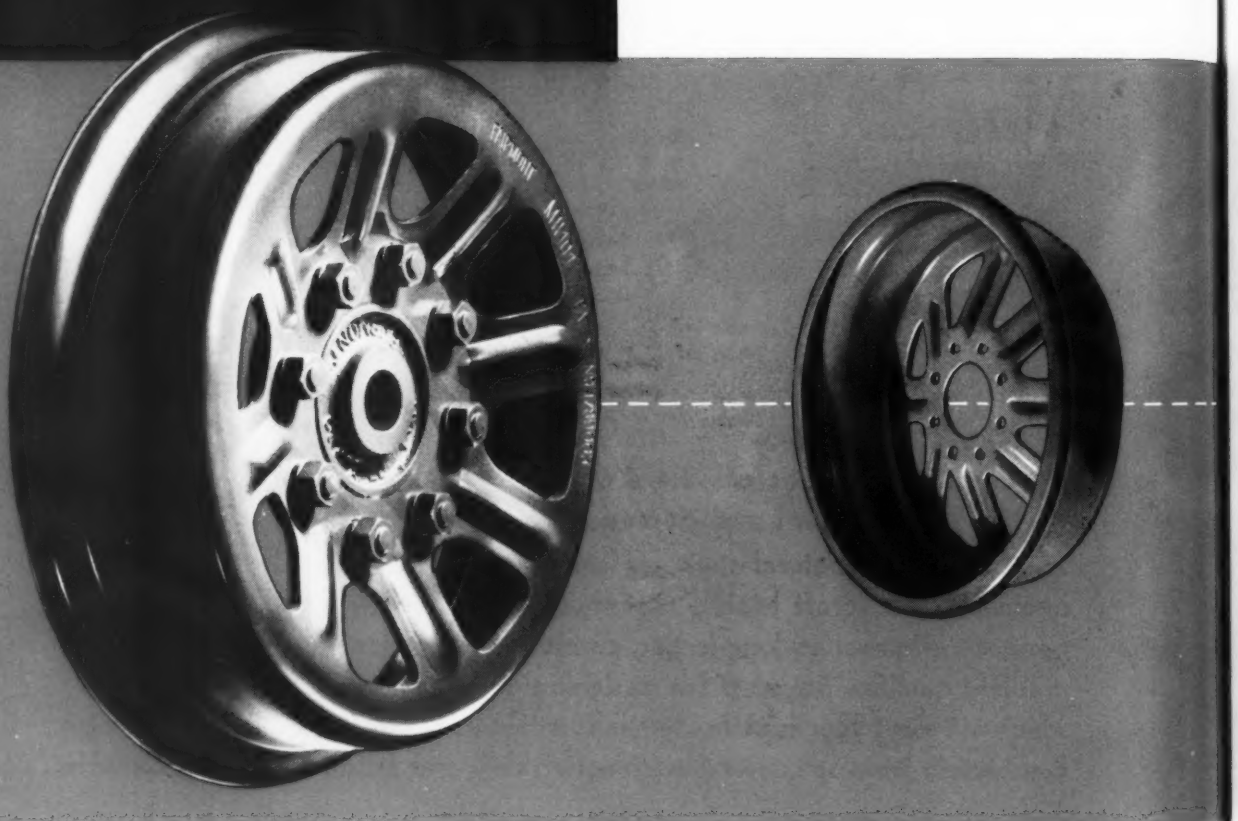

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RAILWAY

TRACK and STRUCTURES

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NEW... KALAMAZOO TRACK MAINTENANCE TEAM

the "Handyman"

It's a combination hydraulic power jack, hydraulic tie nipper, electric tie tamper, and track leveling device, all in a self-propelled one-man-operated machine capable of speeds up to 25 m.p.h. in either direction. Track removal easily accomplished with hydraulic jack and transverse set-off wheels.

Power equipment includes a Ford 60 h.p. industrial engine with heavy-duty over-center power take-off clutch, Vickers hydraulic motors, pumps, and controls, and a Jackson electric generator.

Power jack is activated by two 12,000-pound hydraulic rams. Hydraulic tie nippers work on each end of tie. Tamping head, raised and lowered hydraulically, consists of four latest model Jackson vibrating tamping assemblies, each with two tamping bars. Track leveling assembly operates for quick and rapid reading, accurate to 1/32".

. . . and its new trackmate

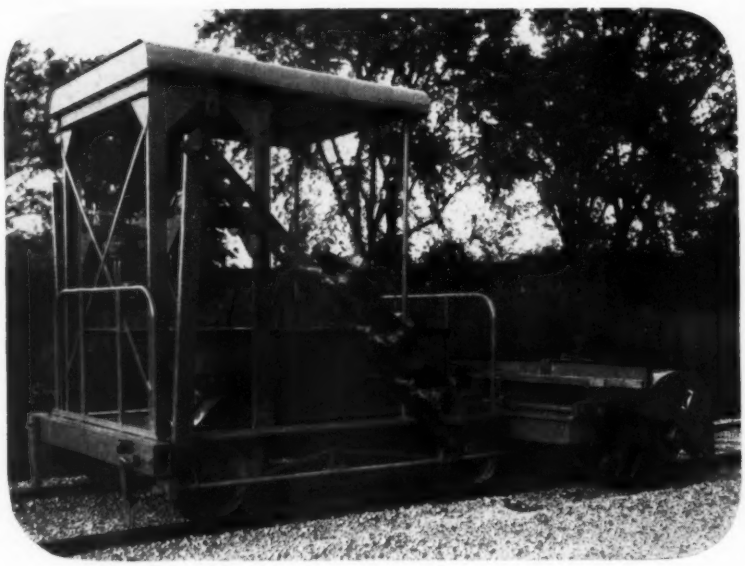
the ballast equalizer and sweeper

Also one-man operated. It has hydraulically controlled discer arms at each side, each equipped with discs or shoulder shaper or ballast leveler. The first operation discs the surplus ballast from the berm onto the ends of the ties.

The broom unit, with its baffle plates, throws the ballast from this position into the area between the rails. The broom is also used for cleaning up the ties after the tamping operations are completed.

A hydraulically-operated turntable is provided for turning unit or removing it from the tracks.

A Ford 60 h.p. industrial engine furnishes power.



THIS TEAM of machines will cut your track maintenance costs amazingly. Let us arrange to demonstrate their working efficiency in service. It is convincing. Write for specification sheets on these units.

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KALAMAZOO MANUFACTURING COMPANY

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Radio and the M/W Field

Some form of communication between scattered individuals is a paramount need in the maintenance-of-way field. The telephone is a wonderful instrument, but unfortunately there is not always a telephone booth handy when the need for communication arises, especially when one of the parties involved is out on the track miles from the nearest town.

How often does it happen that there is urgent need to contact a supervisor when he is going over his territory on a motor car or is traveling by automobile? How much time would be saved if a track foreman could be reached instantly to be advised of a change in the train line-up he is carrying or to advise him of an emergency? What advantages could be expected if the operations of highly mechanized track gangs could be correlated with the movements of approaching trains on a basis infinitely more efficient than is possible with hand signals?

These questions are pertinent at a time when the radio has been adopted so widely, and with such apparent success, by railroad operating departments. It is now an accepted means of communication for expediting train movements, and for directing operations in yards and terminals.

It is true that scattered use of radio is also being made by M/W departments. Several roads are known to be using this medium to govern the operation of track gangs relative to approaching trains. One of these is the Southern Pacific on which the use of radio is described in this issue. A few others have established radio communication networks which include the automobiles of some of their key supervisors.

The fact remains, however, that M/W departments have barely scratched the surface of the possibilities inherent in the use of radio. These possibilities are, at least, worth careful study.

What's Ahead for 1956?

Now is the time to look ahead. It is the time when the pattern of operations for next year is being shaped. In short, it is budget time.

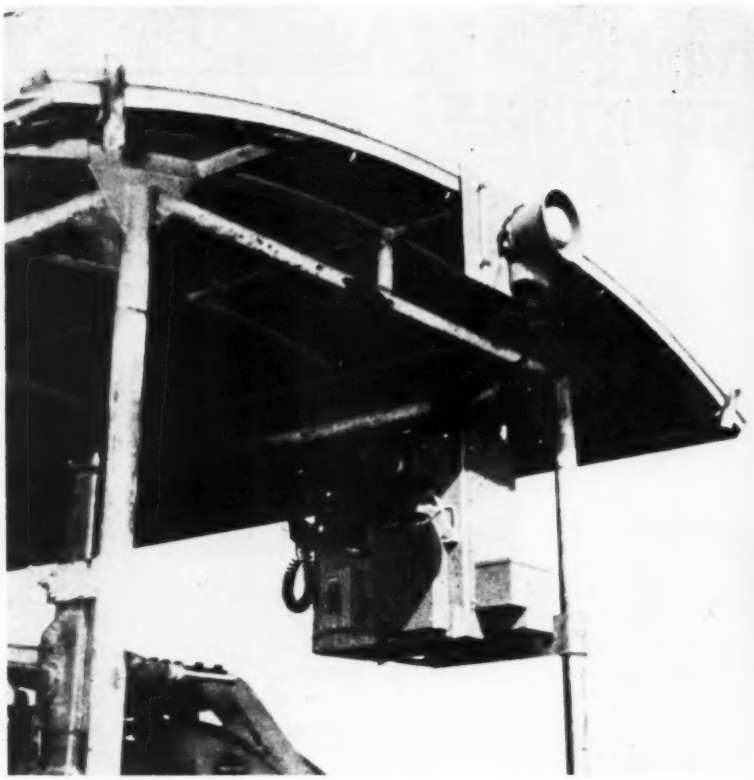
To be realistic, a budget must be foresighted. Those who make it cannot look at the past except for lessons in experience. It is founded, as one authority has said, on four factors: (1) Present and prospective income; (2) present condition of the operating plant; (3) the need for emergency reserves; and (4) standards of net income. In compiling their budgets maintenance men are directly concerned with the second factor and incidentally concerned with the other factors.

Budgets for 1955 were set up during the period of gloom resulting from the depressed earnings of 1954. Contrary to the pessimistic thinking on which many budgets were based, both gross operating revenues and net income this year have shown substantial increases, reflecting improved traffic conditions.

Conversely, however, expenditures for maintenance of way and structures have lagged behind those of the previous year, which were, in some instances, barely sufficient to maintain the physical plant and in others less than enough to provide for minimum maintenance requirements. This tightening of the purse strings has resulted in an accumulation of maintenance of way work on at least some roads.

Now is the time to reverse this trend in maintenance spending. It is a time for boldness and decision. It is the time when requests for the necessary funds to progress both current and deferred work should and must be initiated. Further, these requests should include not only the operating money necessary to supply labor and material but also sufficient capital funds for the purchase of modern machines and tools with which to implement the budget items in the most progressive, efficient and economical manner.

PRODUCTION tamper equipped with radio. SP plans to place radios on five more of these machines.



EQUIPMENT on tamper includes complete radio receiver-transmitter hung from canopy (right) and extra-loud speaker on rear for calling foreman.

Radio Reduces Off-Track Time

For Work Equipment on the SP

Two production tampers and one Burro crane, as well as flagman, are equipped with radio, providing instant, two-way communication

By Robert W. McKnight

Associate Editor
Railway Signaling and Communications

● Productive time of on-track work equipment has been increased, and delays to trains have been reduced, since the Southern Pacific has installed radio on several on-track tie tampers and cranes. The flagmen working with these tampers are also provided with radios, mounted on tripods, enabling them to communicate quickly with the tamper foreman. The radio-equipped tampers have been used on the Sacramento and Shasta divisions on single-track, double-track and CTC territory. All trains on these divisions are radio-equipped, and wayside stations on some sections have radio for communication with trains.

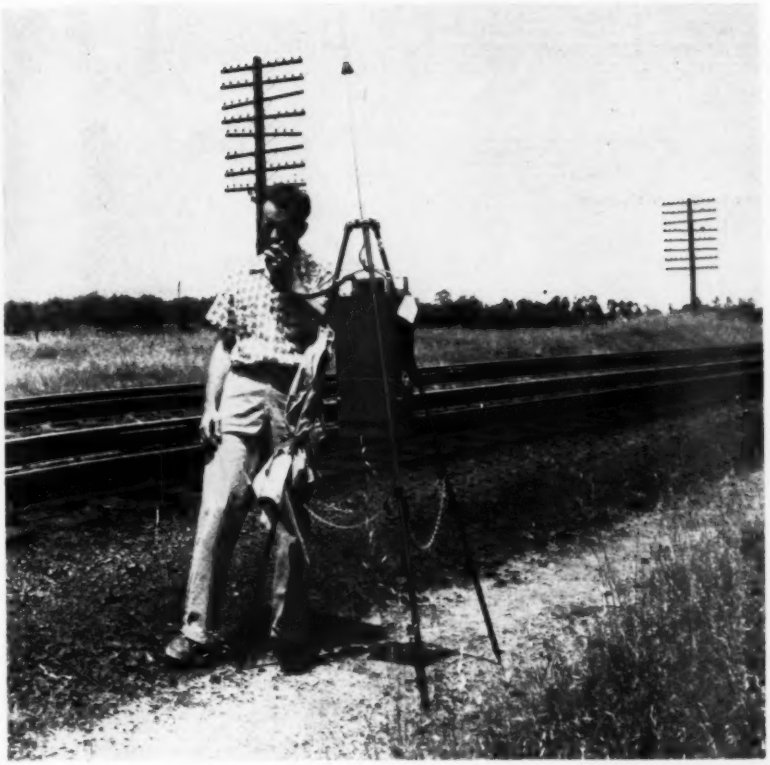
How Radios Are Used

An ordinary tie-tamper gang consists of 25 to 40 men with a foreman. When the gang begins work in the morning, two flagmen go to their stations, one in each direction from the work scene and about 1½ miles away. As noted, each flagman has a two-way radio mounted on a tripod, and can communicate with either the tamper operator or the foreman.

The foreman can get his lineups in two ways, depending upon the territory in which the gang is working. If the wayside stations have radio, the foreman uses the tamper's radio to call the nearest wayside station operator and secure a lineup. If there are no wayside radio stations nearby (within 15 miles or so), the foreman calls a flagman, who takes his radio and goes via automobile or motor car to a wayside telephone booth. He relays into the phone what the foreman tells him on the radio, and relays back via radio to the foreman, the lineup given to him by the telegraph operator.

Foreman to Flagman

When a train approaches, the foreman tells the flagman to let the train come, or to hold it. If the train



FLAGMAN, equipped with two-way radio mounted on tripod, can communicate with tamper operator or foreman.

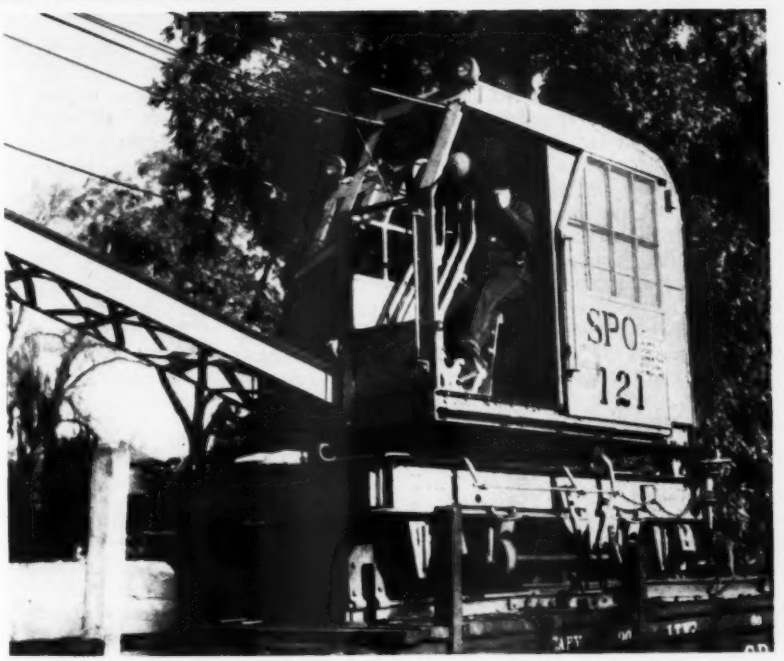
RADIO on crane (below) consists of handset and speaker placed within convenient reach of operator's seat.

is to be held, the foreman radios advice to the flagman when the track is safe.

How They Keep 'Em Working

Prior to the radio installations, the tamper foreman took his gang off the track in time to clear for trains according to his lineup. If a train were late it was difficult to quickly inform the foreman, and as a result he would have his gang in the clear long before the train actually arrived at the working site. Now if a train is late, the foreman is kept advised and has more time to work before clearing the track. Thus the tie tamper gang spends more time actually working.

As the tamper work progresses, the foreman periodically radios the gang's location to the wayside operator, either directly or via the flagman. This information is sent to the dispatcher, keeping him constantly informed. This has also helped to reduce delays to trains because the dispatcher can plan his over-all train movements better, knowing where the tamper gang is working.

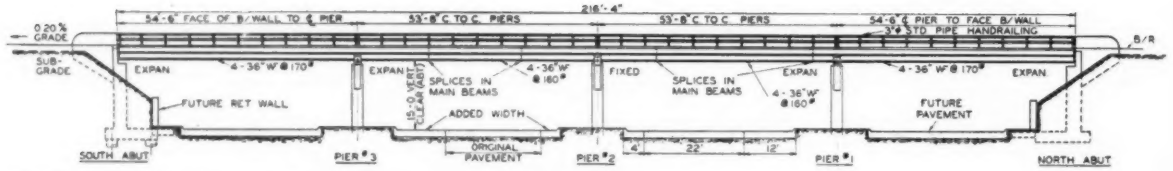


OPERATOR of this Burro crane is using his radio. Major items of radio equipment on all M/W machines were furnished by Motorola, Inc.

More Radio Planned

The SP now plans to equip five more production tampers with radio. The road is also considering putting radio on more Burro cranes, and other work equipment, such as relief cranes.

The radio installations were made by the communications department under the jurisdiction of A. E. DeMattei, superintendent of communications, in cooperation with the engineering department under the jurisdiction of W. M. Jaekle, chief engineer. The major items of radio equipment were furnished by Motorola, Inc.



SPLICES in the main beams are the only connections made by riveting.

Underpass on Katy...

• Was fabricated by welding
• Has unusual deck structure
• Is continuous over the piers
• Has attractive substructure
• Was built with unusual speed

• Fabrication by welding is only one of several outstanding features that distinguish a bridge recently built by the Missouri-Kansas-Texas at Dallas, Tex. Another is the fact that each rail is carried on a longitudinal wood stringer depressed between two wide-flange beams which are the main load-carrying members. And, in addition, the entire structure, 215 ft long, was built in six weeks from the time the substructure was started until the bridge was ready for service.

It is interesting to note that welding was chosen as the means of fabrication primarily because of its neater appearance due to the absense of rivet heads.

The new bridge is located on a lead track built by the Katy into the Brook Hollow industrial district at Dallas, and carries the single-track line over U. S. Highway 77. Originally this highway consisted of two 22-ft slabs separated by a 23-ft dividing strip. However, future Highway plans require 38-ft slabs. Also it was necessary to provide for the future construction, of two additional roadways, 32 ft wide, under the end spans.

Headroom Was Limited

For this situation G. L. Staley, bridge engineer of the Katy, designed a structure having a total length of 215 ft 8 in, end to end of the steel, which is divided into four spans of approximately equal length supported on concrete piers and abutments. A factor in the design was the necessity of providing a walkway on each side of the track. Also it was necessary to conserve headroom by keeping to a minimum the depth from base of rail to underside of steel. And finally, a structure having an attractive appearance was desired.

To meet these requirements Mr. Staley developed for the superstructure a design based on the use of 36-in wide-flange beams as the principal load-carrying members. The construction under each rail consists of a pair of these beams, spaced 2 ft 4½ in apart, and tied together with diaphragms consisting of 18-in wide-flange beams bearing on the bottom flanges of the main members. Resting on the diaphragms is a longitudinal 10-in wide-flange beam carrying an 8-in by 16-in wood stringer on which the running rail is supported.

Since the top of the 10-in beam is somewhat narrower than the wood stringer a ¼-in plate is inserted between them to spread the load over the wood.

Tie Pads Used

The edges of the plate are bent upward so that it also serves as a retainer for the stringer. The rails are supported on the wood stringer by means of tie plates spaced about 20 in apart, center to center, which are separated from the wood by tie pads. The construction is such that the tops of the wood stringers extend only 1⅝ in above the top flanges of the main beams.

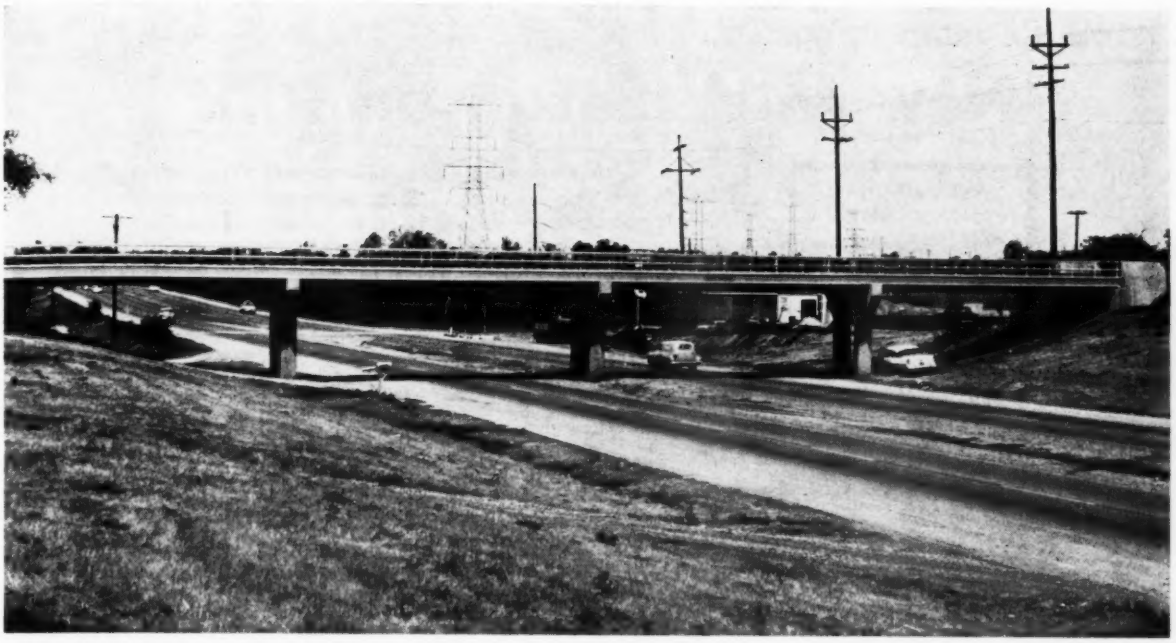
The two pairs of 36-in beams are tied together by diaphragms of ⅜-in plates which fill the entire area between the webs of the adjacent beams and their top and bottom flanges. At the deck level the opening between the two pairs of main beams is filled with a series of ⅜-in plates to provide a solid deck. The inside guard rails consist of 6-in by 6-in by ⅜-in angles fastened to the top flanges of the two inside main beams.

Continuous Over Piers

The main beams are designed to be continuous over the supporting piers. This explains why all of the bearings on the piers and abutments are of the expansion type except at the center pier (Pier No. 2) where the bearings are fixed. All field and shop connections required in fabricating the beam assemblies and their connecting diaphragms and plates were made by welding except the splices in the main beams which are riveted.

The walkway on each side of the track is likewise fully welded. The main supporting members for each walk consist of two 21-in wide-flange beams, to the top flanges of which is welded a ⅜-in grid plate to serve as the deck. A hand rail along each walkway consists of two lines of 3-in round pipe supported by posts made of 5-in by ½-in steel plates.

The sidewalks are structurally independent of the main part of the bridge, being supported on "elephant ear" projections from the piers. These projections are felt to



SPANNING U. S. Highway 77 the bridge was built in six weeks from the time the substructure was started until the job was finished. Bridge carries the Katy's single-track line into the Brook Hollow industrial district at Dallas.Two existing roadways were not only widened but it was necessary to provide for future construction of two additional roadways.

have an aesthetic valve in themselves in addition to screening the bearings on the piers.

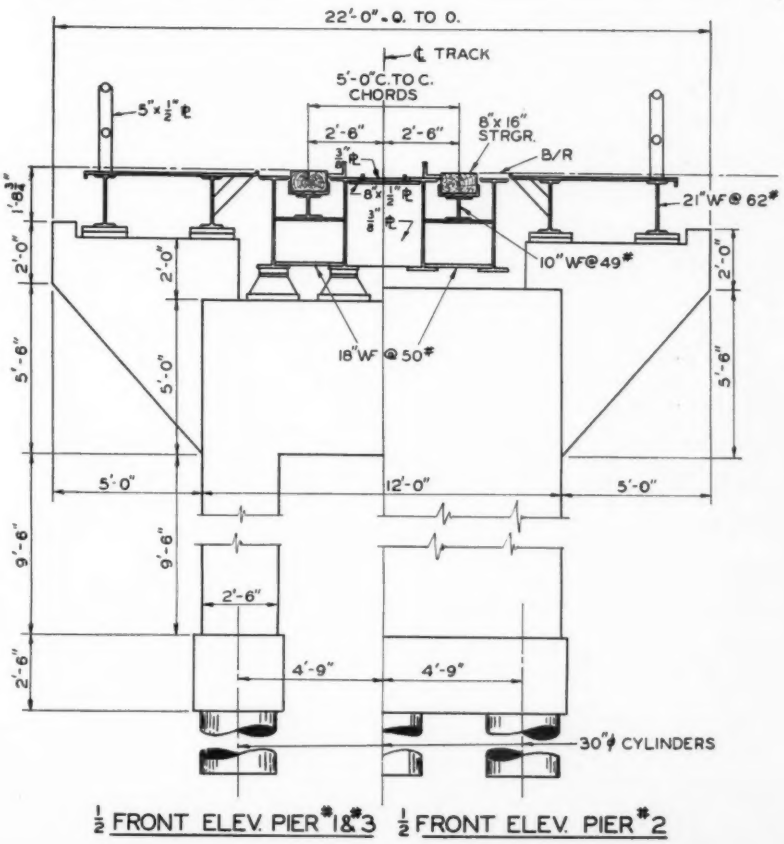
Concrete Foundation Piles

The piers and abutments are supported on poured-in-place foundation piles, 30 in. in diameter, which were made by pouring the concrete directly into holes bored 1 ft into shale. The center pier, which carries the longitudinal thrust of trains, is of solid concrete, but in Piers No. 1 and No. 3 the pier shafts consist, in each case, of two concrete columns 2 ft 6 in square in cross-section, with a 7-ft opening between them. Thus, in effect, these piers are two-pile bents. The abutments are of the U-type.

The bridge was painted aluminum. On each side, over the lane carrying approaching traffic, the words "M-K-T Lines" were placed on the web of the outside beam in black letters on a white reflective background. Below these letters a strip of red reflective Scotchlite was placed along the edge of the bottom outside flanges as a guide for drivers with high loads.

Steel for the bridge was fabricated by Stupp Brothers Bridge & Iron Co., St. Louis. It was erected by the Austin Bridge Company, Dallas, which also did the substructure work.

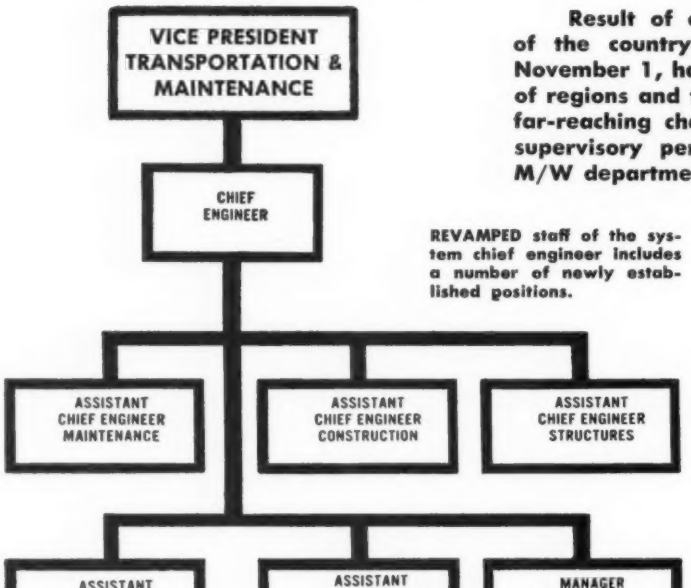
UNUSUAL deck construction, utilizing rolled beams as main load-carrying members, was adopted to conserve headroom.



System Revamp Brings

New M/W Setup on PRR

Result of changed management setup of the country's largest hauler, effective November 1, has been to triple the number of regions and to eliminate divisions. Brings far-reaching changes in administrative and supervisory personnel of engineering and M/W departments.


VICE PRESIDENT TRANSPORTATION & MAINTENANCE
CHIEF ENGINEER
ASSISTANT CHIEF ENGINEER MAINTENANCE
ASSISTANT CHIEF ENGINEER CONSTRUCTION
ASSISTANT CHIEF ENGINEER STRUCTURES
ASSISTANT CHIEF ENGINEER TESTS
ASSISTANT CHIEF ENGINEER COMMUNICATIONS & SIGNALS
MANAGER METHODS & COST CONTROL

REVAMPED staff of the system chief engineer includes a number of newly established positions.

V.P. Trans. & Maint.
A. J. Greenough

Asst. Ch. Engr.—Maint.
L. E. Gingerich

Asst. Ch. Engr.—Const.
C. J. Henry

Asst. Ch. Engr.—Struct.
J. E. South

Chief Engineer
S. R. Hursh

Asst. Ch. Engr.—Com. and Signals
W. G. Salmonson

Asst. Ch. Engr.—Tests
C. J. Code

Mgr.—Methods and Cost Cont.
M. C. Bitner

● The administrative and operating organization of the Pennsylvania went through a complete transformation on November 1. To the casual observer, the significance of the reorganization lies in the fact that it resulted in the number of regions being increased from 3 to 9 while at the same time the road's 18 divisions were abolished. But the real significance of the changes lies in the reasons for them and their effect on the road's administrative and supervisory setup.

The reorganization had its beginning in the conviction on the part of the road's management that the operating and administrative setup, as it existed prior to the changes, was in need of overhauling in the interest of operating efficiency and if the road was to make maximum use of its inherent advantages. A firm of management engineers, Robert Heller & Associates, was engaged to make a study of the road's setup, collaborating with the staff of the president. After

The Nine New Regions, the Regional

Region	Route Miles (Approx.)	Headquarters	Regional Engineer	Assistant Regional Engineer	Engineer—Structures	Engineer—Communications and Signals
New York	1,000	New York	C. E. Gipe	H. J. McNally	F. D. Day	O. M. Wiland
Philadelphia	1,000	Philadelphia	L. W. Green	—	A. H. Hillman	W. G. Trost
Chesapeake	1,300	Baltimore	C. R. Bergman	—	J. A. Jorlett	K. M. Lockerby
Northern	800	Buffalo	C. R. Montgomery	—	H. P. Greene	J. E. K. Krylow
Pittsburgh	1,800	Pittsburgh	G. A. Williams	—	D. C. D. Todd	A. M. Crawford
Lake	1,500	Cleveland	W. T. Hammond	—	M. L. Koehler	A. B. Swartzwelder
Buckeye	800	Cincinnati	H. P. Morgan	—	C. F. Montague	C. P. Huth
Northwestern	300	Chicago	C. F. Parvin	—	W. P. Conklin	J. A. Balla
Southwestern	1,000	Indianapolis	W. W. Boyer	J. S. Snyder	J. D. Moore	W. C. McConnel

more than a year of study the firm came up with recommendations which resulted in the reorganization that went into effect the first of the month.

The goal of the plan is simple; to *decentralize* clearly those functions which can best be handled on the ground—with clear cut policy from system headquarters; and to *centralize* those functions which affect the system as a whole and which cannot be localized from region to region. To achieve the desired decentralization, each regional headquarters will be a completely staffed railroad organization headed by a regional manager, who will be in charge of all phases of the business in his area. Under the former setup the various department heads, such as the chief engineer maintenance of way of each region, worked through the division superintendents to the trainmasters, master mechanics and division engineers. Now the new officers will be in direct charge of field operations.

The new officers of each region include a regional engineer who will have supervision over maintenance of way and structures matters in his territory. His field force (on most regions) will consist of two district engineers who will report directly to him, rather than through superintendents. The district engineers will be relieved of much of their desk work so they can provide management in the field where the work is done.

The table at the bottom of these pages lists the nine regions, their approximate route mileage, their headquarters, and the regional engineers and their staffs. The titles are descriptive of the responsibilities assigned to each man. The chart at the right shows the regional engineers organization of the Pittsburgh region, which is typical.

On the system level extensive changes have also been put into effect. Insofar as the engineering and maintenance of way departments are concerned, one of the most important of these involves the establishment of a vice-president, transportation and maintenance, who reports to a newly established system vice-president. The vice-president, transportation and maintenance, is not a member of the president's staff and has primarily a "line," rather than staff, relationship with the regions. On his staff will be the key system transportation and maintenance officers, including the chief engineer.

New System Positions

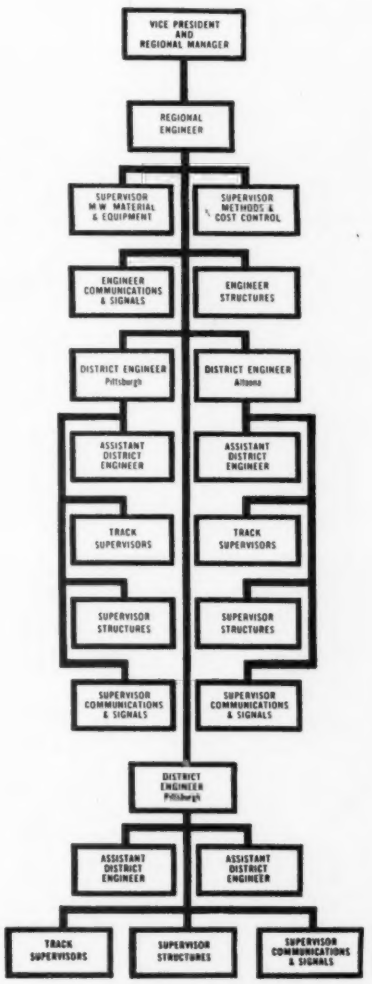
The reorganized staff of the chief engineer is shown by the chart on the opposite page. Three of the positions are newly established. These are the assistant chief engineer—construction, the assistant chief engineer—structures and the manager—methods and cost control. The latter, it will be noted, has a counterpart in the regional organization. The fact that these latter positions have been established implies greater emphasis on matters relating to procedures and costs.

It it understood that the staffs of the assistant chief engineer—maintenance and assistant chief engineer—construction will include additional administrative personnel, but at the time of going to press, the details had not been announced. These will be given in a later issue.

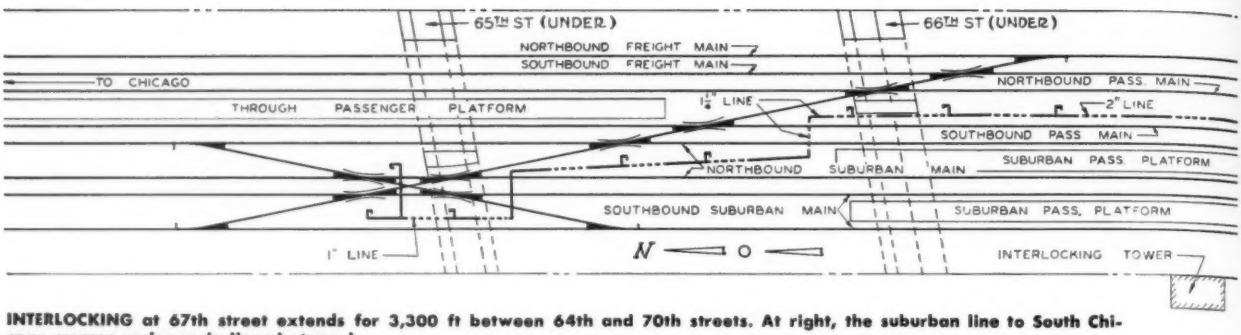
The elimination of one level of management in the organization makes possible the strengthening of both the region and system headquarters without an increase in overhead cost. As far as the organization plan alone goes, the effect on total employment will, it is understood, be nil. The total number of officers and supervisors numerically will decrease slightly; higher-rated officers will increase. All officers and supervisors were notified about their new jobs and headquarters on or about September 29, giving them a month in which to prepare for the changes.

Engineers and their Staffs

Supervisor—Methods and Cost Control	Supervisor—M. W. Material and Equipment	District Engineer	District Engineer
W. E. Hiltebeitel	R. H. Meintel	—	—
E. J. Sierleja	J. H. Ault	E. E. Zacharias, Jr. (Philadelphia)	R. A. Westergren (Harrisburg Pa.)
D. R. Wolfe	W. R. Taggert	A. S. Barr (Baltimore)	T. J. Murray (Delmar, Del.)
R. E. Gorsuch	A. H. Stimson	W. R. Garner (Williamsport, Pa.)	C. H. Kooser (Buffalo)
T. C. Netherton, Jr.	E. Glavin	A. M. Schofield N. Olsen (Pittsburgh)	G. Baylor (Altoona)
J. D. Woodward	A. B. Lewis	D. E. Pegrin (Cleveland)	J. T. Evans (Canton)
J. G. Cunningham	H. A. Spruill	J. C. Warren (Columbus)	J. M. Kirschner (Richmond)
H. E. Simmons	T. H. Taylor	P. J. Harnish (Ft. Wayne)	M. B. Miller (Chicago)
J. P. Zearley	J. W. Warbritten	—	—



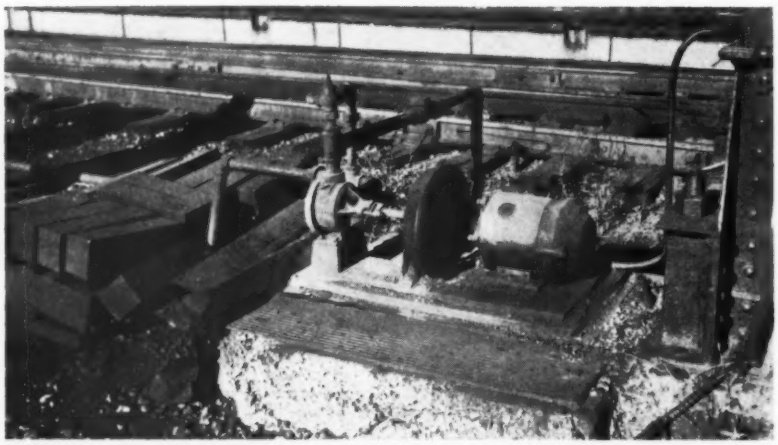
ORGANIZATION of regional engineer's staff of the Pittsburgh region is typical of the new regional setup. Note that division engineers are eliminated.



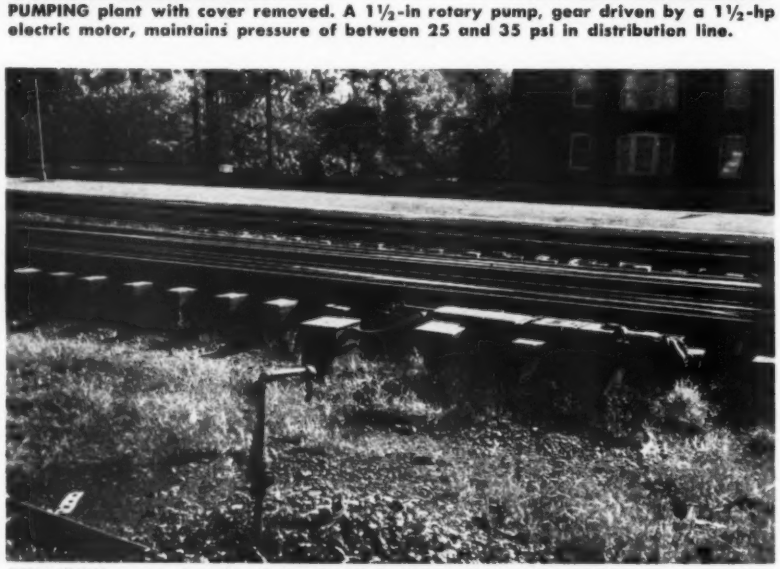
INTERLOCKING at 67th street extends for 3,300 ft between 64th and 70th streets. At right, the suburban line to South Chicago crosses under main lines in tunnel.

Oil Piped to Pot-Type Heaters

Distribution system speeds refilling of pot-type switch heaters at important interlocking plant at Illinois Central's Chicago terminal, thereby promoting safety and reducing demands on the labor supply during storms.



PUMPING plant with cover removed. A 1½-in rotary pump, gear driven by a 1½-hp electric motor, maintains pressure of between 25 and 35 psi in distribution line.



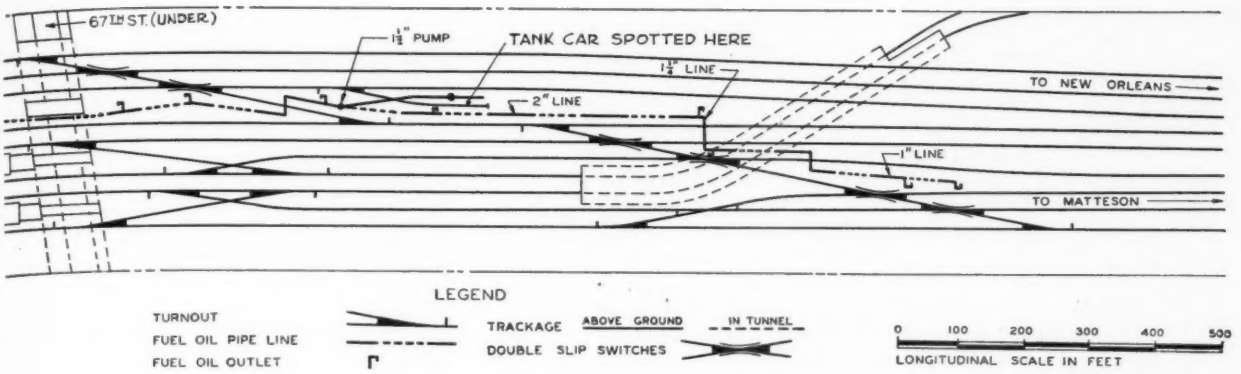
RISER PIPES are equipped with hand cocks and threaded ends to which hose is attached for filling heaters at the 15 double-slip switches and 15 turnouts.

● "Easier, faster and safer." These words describe the merits of a piping system in use on the Illinois Central for distributing fuel oil to pot-type switch heaters at a busy interlocking. With this system the oil is delivered from a tank car to hydrants near switches from where it is handled by hose directly to the individual heaters that are not too far away from the supply line. Thus the labor and hazard involved in carrying the oil in cans across the tracks during storms are eliminated except in some cases mentioned later.

This piping system is located at the IC's vital 67th Street interlocking plant (see map) in the road's busy Chicago terminal. The interlocking has a length of 3,300 ft and encompasses two freight mains, two main tracks for through passenger trains and four to six tracks for carrying commuter trains. There are 15 turnouts and 15 double-slip switches all electrically interlocked and controlled from a single tower. Approximately 461 trains of all types operate through this complex plant during each 24-hour weekday period.

Filling Heaters a Problem

To assure uninterrupted movement of traffic during winter storms, 768 pot-type switch heaters are maintained for melting snow around the interlocked switches. The filling of the heater pots of such a large number of switch heaters can be a laborious and even a hazardous operation during storms when visibility and hearing are greatly reduced. This was particularly true when the kerosene used for fuel in the switch heaters had to be carried in cans a considerable distance from the point of supply to the point of use. This operation also required a sub-



stantial amount of labor at a time when all available men were needed for active snow-fighting work.

From Tank Car to Switch

To minimize the supply and safety problems at this location, the road some years ago installed a distribution system for piping the kerosene directly from a tank car, set out on a short spur track located near the center of the interlocking plant, to outlets adjacent to most of the switches to be serviced. From the outlets the kerosene is transferred directly to the switch heaters through 100-ft hose lines. In the few cases where the heaters are located beyond the limits of the distribution system, the kerosene is still carried in 5-gal cans fitted with long spouts to aid in filling the heaters.

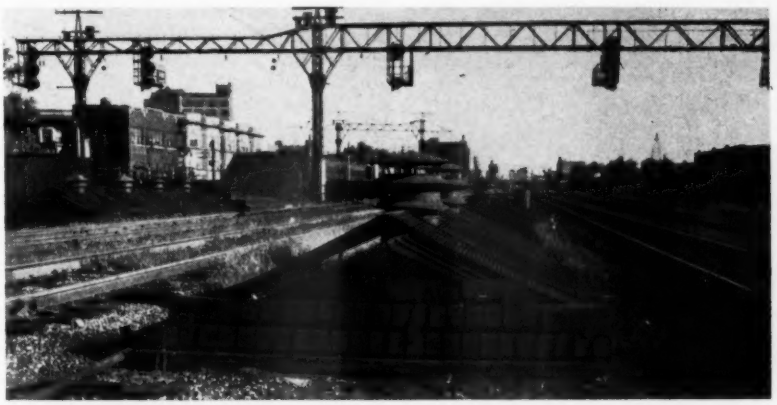
The size of the piping ranges from 2 in for the main pipe down to 1 in for the branches leading to individual outlets. Except where it crosses under tracks, the piping is generally laid on the surface of the ground. There are 15 risers or outlets placed at strategic locations in the vicinity of switches. These are of 1-in pipe and extend about 2 ft above the ground. The end of the riser is shaped like an inverted "U" and the extreme end is threaded to permit attaching the fill-up hose. Flow from the riser is controlled by a hand-operated cock located about midway between the ground and the top of the riser.

Small Pump for Pressure

Pressure in the pipe line is maintained by a small pumping plant located at the junction of the feed line from the tank car and the distribution line. This plant consists of a 1½-in rotary pump which is gear driven by a 1½-hp electric motor. The pumping plant operates automatically through pressure controls which cut in the power when the pipe-line pressure falls below 25 psi and cuts out when the line pressure reaches 35 psi.

At the close of a winter season, the switch heaters are collected, cleaned, piled and stored upside down at convenient locations throughout the plant. The upside-down storage prevents the accumulation of water in the pots. About the latter part of October or the early part of November each year the heaters are serviced, repaired or renewed as necessary, and reinstalled at the switches.

Each crib in which a heater is placed is permanently lined with sheet metal to prevent damage to the switch ties when the heaters are in operation. During an average winter season, this installation consumes between 1½ and 2 cars of kerosene as fuel for the heaters.



SWITCH HEATERS are cleaned and stored upside down at various places throughout the plant during the summer.

SHEET METAL is permanently installed in cribs to protect the switch ties from flames of the switch heaters while they are in operation.

PANEL DISCUSSION

What Kind of Housing?

During the Roadmasters' and Bridge & Building conventions in September much interest was shown in a discussion of employee housing that took place during a joint session of the two groups. With a moderator presiding, three speakers (right) first gave their views on the three major types of housing—trailers, camp cars and permanent camps. Afterward there was an active discussion from the floor, which, as might be expected, dealt mainly with trailer housing. The remarks of the panelists and the ensuing discussion are abstracted on these pages.

Moderator . . .

E. L. Anderson
Chief Engineer
St. Louis-San Francisco

Highway Trailers . . .

Mr. Christianson: Not many years ago it would have been most unusual to consider using convention time to discuss trailer housing for maintenance-of-way employees. There are three broad reasons why today we discuss it. First, of course, our highway system has improved greatly. Second, there is now a public acceptance of modern trailer homes. And finally, there are significant changes in railway operation and railway maintenance organizations. We have fewer, though longer and faster, trains. Maintenance-of-way groups are smaller and their territories longer. Not only is there less demand for railroad-owned housing, but the type of housing is changing. For example, at one bridge, where at one time we had a permanent camp, today it and the nearby small hotel are gone, and we haven't even a siding.

The advantages of trailer housing are described well in recent railroad magazines (*RT&S*, July, 1955). In comparison to camp-car movements, there is less gang delay in moving house trailers. A gang is not hampered by tri-weekly service on a branch line or by irregular local service on a main line. A gang quickly can move to a washout or derailment. Transportation expense often is less. It seems that outfit cars always move on penalty time. Outfit cars are hand-me-downs from other service, and they are expensive to maintain. Frequent shopping means frequent shuffling of car assignments and added expense and inconvenience. Frequently trailers can be set up closer to the work site than can outfit cars. With trailers there are no train orders cautioning crews about occupied outfit cars, no problems of switching cars buried behind them, no overtime for operators occasionally called solely because of outfit-car movements. Possibly, trailers are safer quarters. Finally, and very important, is the fact that many maintenance-of-way employees like living in trailers.

The Other Side

Now look at the other side. Obviously a trailer needs a pulling unit. If the gang has no truck, it can't use a trailer without special arrangements. Paying trailer mileage, just as we pay personal automobile mileage, could solve this problem. First cost of trailer outfits cuts into your budget at the rate of $800 to $1,500 per bed. Many maintenance groups using trailers still require tool, material and equipment cars. These require switching and maintenance, but not usually as much as do complete outfits. Carrying this thought a bit further, but without explaining it, I will say that efficient use of trailers requires closer programming.

Another point: Unless the trailers have independent lighting, water, and other utility systems, they will be found parked no closer to the work site than the nearest depot, which usually has a house track where camp cars could be spotted. Moving trailers does cost money and gang-hours.

What Rock Island Is Doing

The Rock Island has seven general-purpose trailers—all assigned to B&B two-man light-repair gangs. These trailers can sleep 4 or 5 men if necessary. We have six special-purpose units. Half are 8-man bunk trailers. Half are 8-man combination kitchen and dining trailers. One bunk trailer and one diner make an outfit. Two outfits are assigned to B&B gangs; one to a maintenance gang. Since each gang has only one truck, it doubles the second trailer to the new site. We have estimated unit operating savings on these particular assignments of over $1,000 per year, principally in moving time savings.

A railroad must consider several features even in buying a general-purpose trailer. First it should select the size and floor plan for its needs. Type of construction, quality

. . . and panelists

H. B. Christianson, Jr.
Assistant Chief Engineer
Chicago, Rock Island & Pacific

G. R. Collier
District Engineer
Gulf, Colorado & Santa Fe

R. V. Dangremond
Roadmaster
Elgin, Joliet & Eastern

Their Qualifications

Mr. Anderson was invited to act as moderator because he has had extensive experience with both camp cars and house trailers. Mr. Christianson has been engaged in an intensive study of trailer housing for his road, and Mr. Collier has recently participated in an investigation leading to the construction of modern camp-car equipment on the Santa Fe. Mr. Dangremond has been in a position to observe the functioning of both camp cars and permanent camps.

and strength vary considerably among trailers. Permissible combined length of vehicle and trailer differs among states. Nine states still have a 45-ft combination length limit, but probably will revise their statutes. We found that our 1½-ton truck couldn't be used to pull a 27-ft trailer over the system, though the ½-ton truck could. Other ordinances governing trailer parking, sanitation and space per man may affect our selection of trailer models. Most mobile homes are designed for trailer parks having pressure water, electric outlets and sewerage. Often, railroad use demands a water-supply tank, a portable generator or independent lighting, and sometimes a chemical toilet, all optional at extra cost. Then the railroad must decide on the type of refrigeration, heating plant, hot-water heating, type of brakes, size of butane or other fuel storage tanks, special insulation and screened ventilation.

Launching a trailer housing program should consist of more than buying trailers and handing the keys to the foremen. The trucks need dependable hitches, brake controls and electrical connections for clearance lights, and possibly need turn indicator controls and extension mirrors. The drivers need safety instructions and training in starting and stopping slowly; braking in emergency; shifting down to avoid engine overheating; checking periodically the hitch, tires, lights and connections; backing; turning corners from far out; staying extra far behind the vehicle ahead; and so on.

The Rock Island purchased several trailers this year and at the same time converted a few old sleepers to bunk cars. Both types of expenditures were justified. We want more of both on our five-year plan. Eventually we hope to assign some trailers to painters, welders, signalmen and heavy equipment operators as well as to B&B and maintenance gangs at various points on the system.

Camp Cars . . .

Mr. Collier: The management of the Santa Fe, realizing that living conditions are a prime factor in obtaining suitable workmen, late in 1953 appointed a committee of many of our top operating and engineering officials to study methods of housing the personnel of our roadway maintenance gangs. It was considered that good housing should meet the following requirements:

It should be adequately heated, preferably with a petroleum fuel to avoid the unsightly characteristics generally prevalent when heating is done with coal; it should have electric lights; it should have ample washing and bathing facilities with hot and cold water; and last, there should be ample room for the individual employee.

Automotive trailers were considered and we are trying a few of these on a test basis. However, outfit cars have been the principal means of housing maintenance gangs from the early days of railroading and many of the original factors, as well as several new ones, still favor outfit cars:

- We can still handle them with our own

forces and at our own convenience.

- We do not have to license them or get permits to move them.
- They are of ample size to provide adequate space for each employee, whereas automotive trailers generally trend to the congested side and the size is subject to change with each meeting of each state legislature.
- Through conversion to outfit cars we can realize further useful service from property that would otherwise go to scrap.
- Outfit cars move over our own right of way and hence we incur a minimum of public liability.
- Too, railroads have been in the forefront of the drive to educate the public as to the misuse of the highways by trucks and trailers. We would be hypocritical to say that we were only talking about our competitors.

As a result of the studies made by our committee, the Santa Fe has scheduled a program of building 20 B&B and signal gang units. Eight of these units have been completed and two more are well along toward completion. In addition we have built and are building laborers' bunk cars, extra-gang kitchen cars, dining cars and commissary cars. Old tourist sleepers of all-steel construction are being converted to this service. They are 73 ft 6 in long.

Consist of B&B Outfits

Our B&B and signal outfits consist of five cars—namely, a foreman's car, a cook-and-diner combination car, a bunk-and-recreation combination car, a tool car and a water car. These outfits are all wired for electricity. A 5-kw air-cooled power plant in the tool car furnishes power when it cannot be secured from local connections. The cars are heated by oil-burning circulating heaters in each car, controlled by thermostats. The fuel oil for these heaters is carried in the old water tank beneath the car.

All the floors have been covered with grey linoleum except where original covering was in good condition. The roofs of the cars are painted with an aluminum paint. The outside walls are painted our standard outfit car grey. The exterior of one car was painted with a highly reflective white paint to reduce heat absorption from the sun. Tests indicated the car to be about 3 deg cooler than those painted as outlined above. This will require further evaluation before a definite conclusion can be reached.

Taking up each car individually and beginning with the foreman's car, 4 ft 9 in is given over to storage lockers on each side of the central passage. Next comes the kitchen 11 ft 7 in long, followed by the living room-dining room 24 ft 10 in long. The two bedrooms are each 9 ft 4 in long. Two closets and a shower are located between the bedrooms. The foreman's office, 5 ft 6 in. in length, completes the car.

The kitchen is equipped with a propane-fired range. Two bottles of propane are placed in a standard carrier beneath the car. An overhead tank of 144 gal provides water storage. A 30-gal overhead tank is hooked up to an oil-burning hot water heater. The drainboard at the sink is covered with stainless steel which extends 15 in up the wall to make a shield above the sink and drainboard.

The combination cook and diner has the dining area, 34 ft 9 in long, at one end. Next is the kitchen, 22 ft long. The cook's quarters, 16 ft 7 in long, complete the car. Four bottles of propane are carried beneath the car for the gas-fired range. All the drainboards and work tables are covered with stainless steel which extends 15 in up adjacent walls. An electric refrigerator is provided in the dining room for perishables.

The combination bunk and recreation car is divided into three compartments. The recreation room at one end is 19 ft 11 in long. One of the oil-burning heaters is located in this room. The sleeping quarters, 31 ft 6 in long, occupy the center section. The upper berths have been removed and Tiger springs have been fitted to the original lower berth framing 4 in below the window ledge. Steel shelves are secured to the original seat supports at each end of the bunk. This provides excellent storage for a suitcase, extra shoes and other articles.

The shower and wash room, 16 ft long, is at the other end of the car. Two shower stalls, 4 lavatories and 12 steel lockers are provided.

The laborer's bunk car is similar to the combination bunk and recreation car of the B&B unit except that bunks for 16 men are provided.

We have just organized a rail relay gang in the heart of Texas' black land cotton country. The laborers are housed in the new type bunk cars. There was considerable speculation as to whether the colored labor would come out of the cotton patch for extra gang work. They usually work the whole family picking cotton. However, we have been able to get all the men needed. A check inspection of the bunk cars was made recently. I have never seen extra gang laborers' cars so well kept. One colored laborer put it this way, "Boss man them cars sho do beat those quarters for the cotton hands."

. . . Or Permanent Camps?

Mr. Dangremond: Our railroad, particularly the Gary division, is located in one of the largest industrial districts in the country. Competition for labor in the South Chicago and Gary districts is very high so that it is necessary for us to obtain the larger part of our section forces in Chicago through a labor-recruiting commissary company.

During the years 1950-52 a large expansion of the labor forces was necessary due to the conversion of Kirk yard from a flat switching yard to a retarder yard. The capacity of the permanent camp located at Kirk yard was overtaxed and a car camp was set up temporarily until a new permanent camp could be built.

A Modern Permanent Camp

The new dormitory is designed to accommodate 125 men in addition to a 10-man commissary staff which has separate quarters off the dining room. The building is located on the property in Kirk yard and is 60 ft wide by 187 ft long. It is a one-story concrete block structure with an exterior of brick veneer and is

supported on a concrete foundation.

About half of the building is made up of five dormitory rooms, toilet and wash rooms and connecting corridors. The other half includes a large dining room, a kitchen, meat and vegetable walk-in refrigeration rooms, a staple foods storage room, a linen and blanket storage room, sleeping rooms for the commissary staff and a utility room.

The dormitory rooms are each fitted with 11 to 18 two-level steel cots depending upon the room size and sleep from 22 to 36 men when running full capacity. During slack periods or winter seasons when forces are reduced the rooms are fitted with single cots so that each room sleeps from 11 to 18 men. Each room is equipped with electric wall outlets for radios, etc., brought in by the laborers.

At meal time (morning and evening), the 17 tables in the dining room are set up with generous quantities of food "family style" except for meats, which are served individually.

After the morning and evening meals a commissary room in one corner of the dining room is opened for business. Here cigarettes, cigars, candy, stationery and other supplies are stocked and sold over the counter.

During emergencies such as snow storms, derailments, etc., arrangements are made to feed the men working, whether camp residents or not, at any time required and in addition the dining room is open on a 24-hr basis with a short-order cook on duty to feed train-service and other employees at any time for a reasonable fee.

The camp is so located that the men are within easy walking distance from their various assigned headquarters in Kirk yard or Gary Mill yard.

A great amount of emergency over-time work is done by our forces on the Gary division, particularly in the Gary Mill yard. In many cases repairs must be made with the utmost despatch to prevent the shutdown of a steel-making operation. Track men for this emergency overtime are called of course in seniority order but many of them are permanent-camp residents who have accumulated sufficient seniority to work on the emergency gangs. Having these men available is an important factor in emergency maintenance of tracks in a large steel mill yard.

Turnover Greatly Reduced

During the period of reconstruction of Kirk yard when a car camp was temporarily set up and the labor turnover was high, we were constantly plagued with the Gary Board of Health and Sanitation making inspections and suggestions concerning our housing for maintenance men. In addition to this we were given some very adverse criticism in the local Gary paper due to the problems of behavior and discipline of our men in the city.

During a one-year period just prior to the construction of the new permanent camp we had a track-labor turnover in Gary of 5,746 men in order to work an average of 429 men. Since the camp was put in operation this has dropped steadily and at present there is an annual turnover of approximately 300 to average a working force of 150 men.

Advantages Summarized

To summarize, we find that permanent camps are advantageous in terminal locations because:

(1) They attract and keep labor in a highly competitive area by offering nearness to work—no transportation cost—reasonable board rates—well-balanced, hearty meals—payroll deductions for meals and commissary—availability to overtime work.
(2) They eliminate problems of health and sanitation associated with other types of camps.
(3) They reduce the problems of behavior and discipline associated with large labor turnovers in other type camps in terminals.
(4) Reduce delays and cost in feeding laborers and other employees engaged in emergency operations.
(5) Keep labor available on the property for emergency overtime work.

What Was Said During the Discussion

Mr. Anderson: The floor is now open to those who have questions to ask. It would be appreciated if you would ask first questions with regard to trailer housing, and then follow with camp cars, and permanent camps.

G. B. McClellen (T&P): In the case of an emergency, where you have to move your gang a considerable distance, can you move them quick enough—for instance, to a washout? I'd like to hear how they are handled. Have you got tractors to move all of them?

Mr. Christianson: Let's say that generally you do not need to move a very large gang for an emergency. We had a washout at Fowler, Kans., at 4:00 pm, about 200 miles away from the nearest B&B gang. That gang was there with their outfit at 4:00 am.

Movement of Over-Length Units

Question: How about permits for moving over-length trailers? Do you have much delay on that?

Mr. Christianson: Illinois has a 45-ft combination length, but in driving through the state you find 45 and 50-ft trailers. I think the highway departments have a very fast process of giving permits. There isn't much delay. Our trailers, pulled by a half-ton truck, can move through any of the 14 states in which we operate. Generally, the railroad trailers are under 30 ft. If we go to a long trailer, then we will have to worry about the permit problem.

G. P. Smith (NP): In what manner do you move the men overnight when you are not permitted to handle men in trailers on the highway?

Mr. Christianson: Most of our men have their own automobiles, and around every trailer camp you will find an auto for nearly every man. Most states do not permit occupied trailers to be moved, so the men ride in the truck. If there are too many materials on the truck, we have to get cars somehow. You can't move men in trailers.

Question: Can you get the trailer companies to use your specifications for design or do you have to depend on what they have to offer

Mr. Christianson: You will find extreme competition in that field, and you can probably find a trailer manufacturer to build whatever you want, but there aren't many building special designs for railroads. Of the 13 trailers we have, I think there are four manufacturers represented. We haven't really settled on a design as yet. Surely you can get any floor plan you want.

R. L. Fox (SOU): Don't you think one of the main advantages of a trailer is to camp the men close to

work? If you have a bridge structure four miles out in the country, what you want to do is camp at the bridge, so you bring the trailers in.

Mr. Christianson: Certainly, that is true. You want to get as close to the site as possible, and quite frequently when I see a trailer parked at the depot, I wonder why it is there. I'd say nine-tenths of the time we are parked at the depot. I think we should get away from that. There is a lot of policing we have to do in supervising trailer equipped gangs. I think our little two-man light repair gangs are making lots of money for us with those mobile units that can get around, and yet you have to exert a lot of control over them. For those two-man gangs, we should have some kind of rule to the effect that the trailer has to move every three or four days.

What About Sanitation?

A. G. Humphries (SP): The question of sanitation arises. Say you have a large group of trailers set up. Do the local authorities often force you to put in a sewer connection?

Mr. Christianson: Sanitation is the biggest problem in trailer housing of gangs. Perhaps some day, if we have more and more of these trailer units, we will have connections at the stations for them. I'd say most railroad trailers have toilets which are not used. The men use the depot toilet or some building nearby. Perhaps there is a Southern Railway man here who can tell me. I believe that company uses outhouses with its trailer gangs.

J. E. Griffith (SOU): For the very reason the sanitary question is a major one, we have made every effort possible to keep the trailer camps out of cities, and by being out in the country where the open toilet is permissible, we do have toilets of that type. We haven't had any serious trouble with that sanitary problem yet.

F. H. McKenney (CB&Q): In parking these trailers out at the bridge site or locations where a job is going on, do you have any trouble with arranging to get water and supplies to them?

Mr. Christianson: We have larger than normal water supply tanks on the trailers. Our lighter trucks will carry water to the trailer sites. But we are not representative; we are not using trailer outfits with large gangs.

Mr. Griffith: As a result of our going to the trailer operation, the commissary companies with which we do business have equipped trucks that go out to the camp site, wherever it is. If we can get the truck pulling the trailer to a site, they can get there with their supply trucks, and they take the supplies right to the trailer site. I think all the commissary companies will consider that. They have gone along with us very well on the Southern.

Question: In connection with B&B operations, what means do you have for carrying the heavy equipment and supplies that normally accompany such an outfit?

Mr. Christianson: I didn't cover that in my talk. We do have to have tool cars and equipment cars and perhaps even flatcars with these trailer-quartered gangs. But for, let's say, two-thirds of the jobs, it doesn't take much material, so let's say that the trailer should move only three times as much as the tool car, and that's about the average we have. A light repair gang has a range of 40 or 50 miles around its supply base. But we do have to schedule the work carefully.

Mr. Griffith: You'd be surprised how well you can get along without tool cars and material cars. If a lot of you will go back and look at your material cars, you'll find you have some bridge lumber on the bottom of the pile that has probably been there 20 years and wouldn't be worth much if you could get it off. The best way to handle your material is to have it at a central point. If it has to be shipped out, load it into a car, route the car to the site, unload it and get it back in revenue service. Your tools are no problem. Put them in a portable tool box and set it on the back of the truck and move the tools the same time you move the camp cars.

Mr. Anderson: If there are no further questions about trailers, we will be open for questions on camp cars. I would assume that camp cars are such an old commodity on the railroads, probably so unpopular, that nobody wants to ask any questions concerning them.

Question: Mr. Collier mentioned a 16-man bunk car. That's about twice what we have on the Pacific Coast.

Mr. Collier: These 16-man laborers' cars meet the requirements of California, which I understand are quite strict. As outlined, the bunks are not double-decked at all. We simply have one bunk built into the original lower berth of the old tourist sleeper, and as such it does meet California requirements. You understand these cars are 72 ft 6 in long. It seems to me those old tourist sleepers had eight or more sections on each side.

Question: In that 16-man bunk car, are there no lockers or facilities for the extra clothes those gangs have?

Mr. Collier: These are for the extra-gang laborers, and normally it has been our experience that such men usually bring one of these old tin suitcases and maybe an army duffel bag or something like that. Those shelves built beneath the bunks have been adequate for that purpose. The cars I inspected last week seemed to have ample storage provided.

Where to Park Them

Question: With the trend toward retiring old type outfit cars now, isn't space in replacing these outfit cars an item to consider?

Mr. Collier: That, of course, is one of the items brought up which favors getting away from track equipment. In a lot of places, we have to build temporary bunk-car spurs to keep the tracks open for revenue service. However, normally on our B&B gangs, there are only about five of those cars that have to be kept together, and you can usually find some rather short track somewhere in the station grounds on which to place them. Of course, you can keep your material cars any place else.

Mr. Anderson: If those are all the questions on camp cars, has anyone something on permanent housing?

K. R. Lohr (SP): What would be the maximum distance you could haul these permanent gangs by highway or rail, and still be economical?

Mr. Dangremond: We quite frequently transport men from our Kirk yard camp to South Chicago, about 18 miles, and anything over that, particularly in a heavy industrial district where you have traffic problems, certainly would not be economical. We have trucked them that far for work, and we find we get about six hours' work out of the eight-hour day.

Mr. Lohr: What about by rail?

Mr. Dangremond: With motor cars going out of the picture on our railroad, on account of the heavy traffic, we have found that to transport men by rail from a permanent camp any farther than about four miles is just asking for trouble. You may be tied up in the evening, causing the gangs to go on overtime, you don't get out to the job on time, you can't coordinate your work with equipment, and it is just a losing proposition.

FUNCTIONAL lines of the precast stations are relieved by the canopy overhang and the angled cut of the front sidewall panels.

Latest in Low-Cost Construction . . .

Precast Concrete Stations

Standardized design of precast wall panels, permitting mass production and rapid erection, is answer of the Wabash to the problem of providing economical but attractive stations in the smaller communities.

● In designing and building small combination stations, the problem facing many railroads is to obtain adequacy and pleasing appearance while keeping the cost to a minimum. Many railroads have tackled this problem, including the Wabash which has come up with a solution involving the use of mass-produced, precast concrete slabs for the walls of a compact, standardized structure. To date, two stations have been erected in accordance with the new design and method. The results are felt to be entirely satisfactory and, on the basis of experience with these two structures, refinements and improvements are planned for the future.

A Common Problem

But let's start at the beginning. In common with other railroads, the Wabash has been faced with the problem of replacing many of its station buildings located in small communities throughout the system. As these old stations, mostly constructed of wood, have grown older, difficult maintenance problems have arisen. These problems led the road to undertake an investigation to determine the type of station which would be most suitable for use in replacement of these older structures. It was looking for a design that would have low initial cost, low maintenance cost, and pleasing appearance.

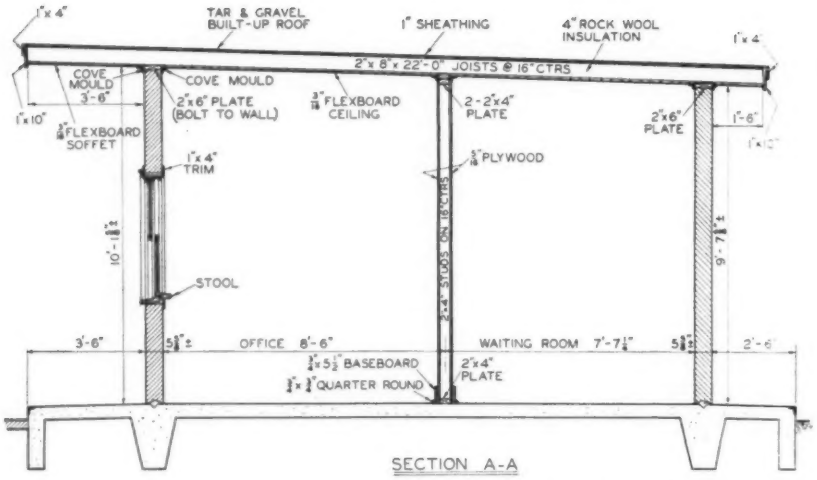
Why Design Was Chosen

It was as a result of this investigation that standardized, precast concrete panels were selected for use in the new station program. There were several considerations behind this decision. First, the standardized panels comprising the wall sections of the stations could be mass-produced. Second, production could be handled by the bridge and building gangs during the winter when they were least busy. Third, the panels could be manufactured at a central location on the railroad and readily transported to the site of installation. And finally, because of their precast nature, the buildings could be easily assembled, saving the road's B & B gangs considerable time during the summer when time is at a premium. All of these features would contribute to a low initial cost, and at the same time structures would be produced requiring a minimum of attention.

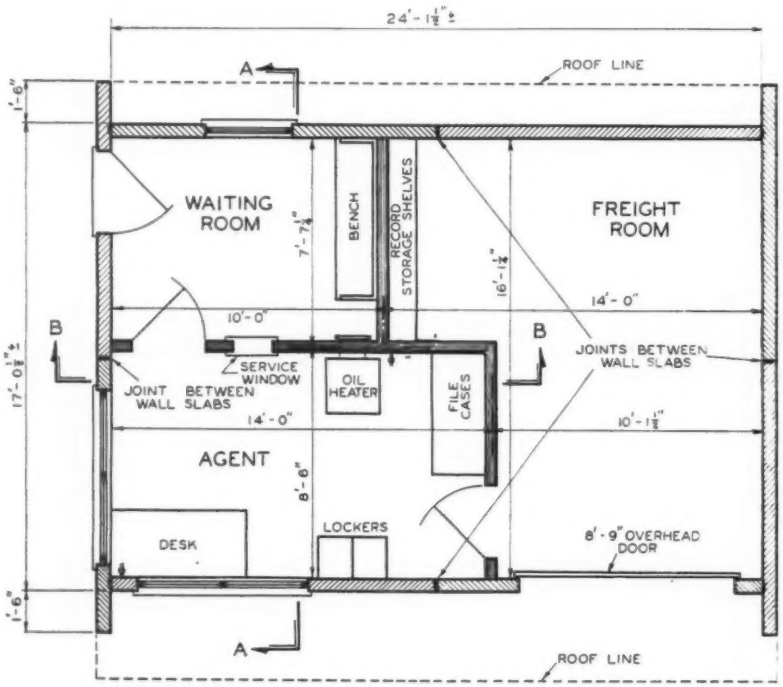
Decide on Flat Casting

After the decision had been made to use precast panels for the wall sections, it was necessary to decide on the most economical and expeditious way of constructing them. To this end the precast panels were designed to be cast in a flat position, thus eliminating the necessity for relatively expensive side forming, since only edge forms were required. This method of casting the wall panels will also result in labor economies in placing the reinforcing steel, since it can be laid flat and assembled into readily placed bar mats.

At present two of the precast concrete stations have been constructed, the first of which was built at New Florence, Mo., and the second at Morrisonville, Ill. These



ECONOMY and ease of erection were guiding factors in design of structures. Facilities are compact (below) and construction details (above) show simple design.



structures are identical, being based on the standard design developed by the road. Details are shown in the accompanying drawings. As to size and the facilities provided, the stations have proved adequate for the localities in which they have been erected.

May Use Precast Roof Slab

At present, as shown in the drawings, the floors, foundations and exterior walls are constructed of concrete. The partition walls and the roofs are of frame construction. Experience with the two stations that have been built indicates that economy may be realized through the use of precast concrete roof sections and partitions, and tentative plans have been made to change the design accordingly.

Construction of Footing

In constructing each of the two stations, a sloping ditch, 1 ft 4 in wide at the top and 8 in at the bottom was dug about the perimeter of the building. Filled with concrete, this ditch provided a footing 1 ft 6 in deep, reinforced with five No. 4 bars. A concrete floor, 5 in thick and reinforced with welded wire fabric, was then laid on top of the footing and on a sand fill. To guard against frost action a 5-in cutoff wall, 1 ft 6 in deep, was cast integrally with the edge of the walk extending around the perimeter of the structure. The exposed edges of the walkways are protected by a light steel angle.

It will be noted from the illustrations that the stations have a canopy overhang at both the front and the rear; also that the roof joists are supported on the front and rear walls, with the sidewalls extending above the roof line to form shallow parapets.

Eight Different Panels

Eight precast wall panels are required for each building. These are all 5⅝ in. thick, but otherwise no two of them are alike. Three are plain without openings, while the other five include frames for windows and doors, and one contains an opening for an 8-ft by 9-ft overhead door to the freight room.

The panels are reinforced throughout with No. 4 bars, placed approximately 12 in both ways and located at the center of the panel. Diagonal bars are provided around the openings for windows and doors. Two No. 4 handling hooks are embedded in the top of each slab to accommodate hooks for lifting and erection. Anchor bolts ¾ in by 21 in are provided along the top edge of each panel and adjacent to the sides, which are used in bolting adjacent sections together during erection. Keyways 1 in deep and approximately 3 in wide were cast into the side and bottom edges of each slab to provide an area for grouting during erection.

Air-entrained concrete, made with

an expanded shale aggregate and designed to have a compressive strength of 3000 psi at 28 days, is used in constructing the panels. The air-entrainment is expected to provide a concrete having the necessary inherent resistance to the action of weather experienced in the area served by the Wabash. The purpose of the expanded shale, or lightweight aggregate, is to reduce the weight of the panel below that of conventional concrete, thereby facilitating their handling during erection.

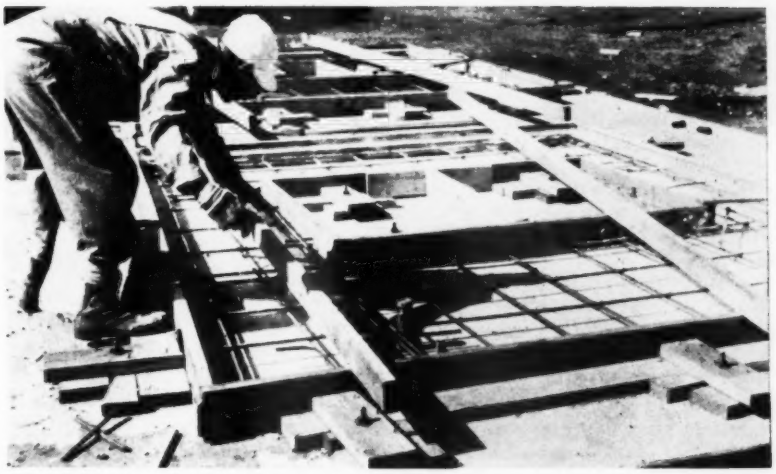
Slabs Were Produced

The first of the new stations to be constructed was that at New Florence, and the casting of the panels for this structure was done at Moberly, Mo. These panels were cast in two lots, four at a time, on a plywood casting bed. Side forms for the panels were made of 2-in by 6-in finished lumber, the actual width of which is 5⅝ in. The inside surfaces of the forms were sprayed with form oil, after which the bar mat, the wood window and door frames, and the electrical fixtures were placed in them. Before the concrete was cast the forms and the items contained in them were tied down to prevent any movement. The panels were cast with the interior side down, and the exterior side was given a steel trowel finish. Immediately afterward, the panels were covered with straw, and kept damp for seven days. They were then stripped, lifted from the casting bed and loaded on flat cars. The second four panels were then cast.

Concrete Casting Bed

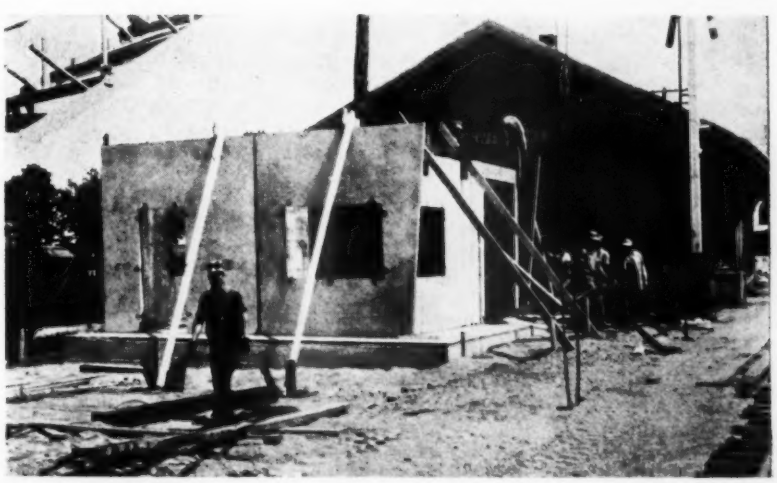
The wall panels required for the station erected at Morrisonville, were cast at Decatur, following about the same process as that used at Moberly. However, two concrete slabs were installed to act as a casting bed, one slab on each side of a loading spur. One section is 30 ft by 50 ft in dimensions, and accommodates all of the large wall panels. The other slab, 15 ft by 30 ft, was used for casting the smaller pieces. Bolts embedded in the casting beds are so located as to hold the edge forms which are hinged at the corners. With this arrangement of tiedown bolts, planned form construction and concrete casting beds, it will be possible to reuse these facilities for casting similar panels in the future. When additional stations of this type are built, the casting work will be done at Decatur.

How They Are Cast and Erected . . .



CONSTRUCTION of panels for one of the stations was done at Decatur on concrete casting bed. Here reinforcing and window frames are in position in form.

WALL PANELS are cast with the interior side down so that exterior side can be given steel trowel finish. These panels are ready for loading.



DURING ERECTION the panels were handled into position with crawler crane and held in place by wood braces until permanent connections could be made.

Erection Procedure

The method of erection was similar for both the New Florence and Morrisonville stations. The first step, of course, was to prepare the floor slab and foundations as already described. A ¾-yd crawler crane was used to lift the panels, one at a time, from the flat cars on which they were shipped to the site and to place them in position on the floor slabs.

Keyways had been constructed in the slabs at the wall lines, and these, together with those in the bottoms of the wall panels, were filled with grout after the panels had been brought to proper level through use of metal shims. This grouting was not done until all the panels were in their final position in the structure.

As each panel was placed, it was held firmly in position by means of wood braces, and as soon as the adjacent panel was installed, the two panels were connected by metal plates placed over the bolts pre-set in the top edges of the panels.

They Went Up Fast

Total erection time, including the time required for grouting between the floor slab and the bottoms of the panels and between adjacent panels, was approximately 8 hr for both the stations built to date. As more stations are erected it is expected that the construction techniques will improve, resulting in reduced erection time. The opinion of the bridge and building men doing the work is that the erection time can be cut in half. After the keyways were filled with grout they were primed with shellac, and the exterior faces were filled with a calking mastic.

The new stations were designed and constructed under the general supervision of J. C. Bousfield, chief engineer of the Wabash, W. G. Harding, architect, and J. L. Carney, office engineer.

Leasing Companies Formed By Two Equipment Makers

Kershaw Manufacturing Company and Morrison Railway Supply Corporation have both organized affiliates to handle the leasing of work equipment to railroad users.

The leasing of maintenance-of-way work equipment is getting to be big business. For a number of years, various manufacturers have had agreements whereby their equipment is made available without direct or immediate purchase by the user. The railroads have found that the use of equipment on this basis has advantages under some conditions, and the result is that an increasing number of them have entered into such agreements.

This trend has led at least two manufacturers to set up separate leasing arrangements or corporations. One of these is the Kershaw Manufacturing Company, Montgomery, Ala., which has organized the Kershaw Equipment Leasing Corporation. The other is the Morrison Railway Supply Corporation, Buffalo, N. Y., which has organized, as its leasing affiliate, Morrison Plan, Inc. In both cases the headquarters of the leasing concerns are the same as those of the parent companies.

The Kershaw Setup

The Kershaw Manufacturing Company states in an announcement that the Kershaw Equipment Leasing Corporation is a separate corporation in its own right, with its own officers, stock and organization. "Its function in the railway field will be to lease equipment—any make, style or model of equipment—to railroads which find it desirable to lease, not purchase, the machines they need to maintain their track." It is pointed out that, while the leasing concern will work closely with the Kershaw Manufacturing Company, "it is designed and set up to lease non-Kershaw machines and equipment not normally considered in the track maintenance field if any railroad decides to lease this type of machinery."

Two Lease Plans Offered

The two lease plans originally offered by the manufacturing company will be continued by the lease company. They are:

1. An outright three-year lease of any machine desired.

2. A 6 to 12 month rental with option to purchase. Under this plan, machines are leased from 6 to 12 months. If at any time during this period, the railroad decides to purchase the machine, 90 per cent of the rentals it has paid may be applied to the purchase price of the equipment.

It is stated, further, that the leasing corporation "will make available to railroads a wide variety of lease plans, in addition to the established lease plans now offered by Kershaw Manufacturing Company. Short term leases will be gladly arranged."

Royce Kershaw, president of the manufacturing company, is also president of the leasing corporation. Executive vice-president will be W. C. McKay, who comes to the company from the Philadelphia Transportation Company where he was assistant vice-president in charge of operations.

The Morrison Plan

Morrison Plan, Inc., is the outgrowth of a formula developed several years ago by R. L. Morrison, president of Morrison Railway Supply Corporation, to lease freight cars on a monthly rental basis at a per diem cost less than the railroad would have to pay to get cars from the AAR pool. As applied to work equipment, this plan, as described in a recent announcement, will "enable the users of heavy construction and railroad maintenance of way equipment to lease various types of equipment (produced by different manufacturers) in one transaction. It will also provide manufacturers an outlet for their products to users who desire to lease." It is pointed out further that "the prospective user selects the equipment, Morrison Plan purchases it for his use, and all of the equipment is written into a single lease."

An example of the use of the plan is provided by a recent transaction involving the Detroit, Toledo & Ironton. The railroad needed various types of maintenance-of-way equipment but wished to lease rather than purchase. A package lease agreement was worked out between the railroad and Morrison Plan, Inc., covering modern equipment from five different manufacturers.

NEW TERMINAL of the Lehigh Valley at Buffalo was built when the railroad agreed to sell more than four miles of its right of way into the city for use of New York Throughway. Building (above) combines offices, lcl freight room, express and mail platform and passenger station. In waiting room (right) walls are almost entirely of Solex heat-resisting glass. Room has suspended Fibreglas ceiling, interior walls of brick, maple settees with natural finish and terrazzo floor. Settees are backed with continuous brick piers with slate tops. Because of large areas of fenestration the waiting room has been described as a "bit of outdoors heated." Mullions of glass sidewalls are of aluminum. Lunch counter in waiting room has Formica top.

News Briefs in Pictures . . .

ALL-METAL portable step (below) has been adopted by Union Pacific for use with outfit cars. Attaches to cars with swivel-type hooks that fasten to vertical hand holds on each side of car door. Research Engineering Association built the steps.

PARTIALLY in operation is the Pennsylvania's new classification yard at Conway, Pa. First half of the yard (shown above) went into operation in September. In distance is eastbound classification yard with a capacity of 3,557 cars. Total capacity of $34 million project will be 9,000 cars. Continuous welded rail is being used throughout.

WHAT'S THE ANSWER? . . .

. . . a forum on track, bridge, building and water service problems

Pre-Curving Rail for Curves

What considerations govern the necessity of pre-curving rail to be laid on curves? Why? What is the best way of pre-curving this rail? Explain.

Introduces Special Problems

By D. T. Faries
Engineer of Track, Bessemer & Lake Erie, Greenville, Pa.

In considering the desirability of pre-curving rail when building heavy-duty industrial or mill tracks it is conceivable that some advantage could be found for pre-curving heavy rail sections to be used on very sharp curves. Due to construction difficulties encountered when laying heavy rail on sharp curves of 30 deg or over pre-curved rail would be easier to lay and would give and maintain a more accurate curve. In congested locations with restricted clearances, such as generally occur in heavy industrial areas, it is highly desirable to keep curves in good line not only to maintain clearances but also for economical maintenance. However, conditions of this nature are relatively few on most roads and while it might be desirable to lay pre-curved rail at these points serious consideration should be given to the disadvantages involved before pre-curved rail is laid in the track.

There are many disadvantages to pre-curving rail, chief among which are the extra cost of pre-curving, the special loading and handling required and the problem of storing if rail is bent for several different curves. Separating and handling these rails can become quite involved. Furthermore, in order to retain the advantages of pre-curved rail it is necessary to carry this rail in stock for replacement purposes. This increases the rail inventory with material which can only be used at a single location for a fixed purpose.

If the use of pre-curved rail is found to be desirable the rail should be ordered curved to the specified degree at the mill. A series of kinks rather than a uniform curve would most likely result in an attempt to curve the rail in the field.

The Bessemer & Lake Erie has been maintaining curves up to 25 and 30 deg on industrial tracks for many years. These curves were originally constructed and have been maintained with standard 33-ft or 39-ft straight rails. We have not experienced any great difficulty in the construction or maintenance of these tracks. However, these tracks have been constructed of 100-lb rail, which is fairly easy to handle, and traffic over them has been quite light.

In view of the above considerations and the disadvantages involved in pre-curving rail it is our practice to use straight rails except in those extreme cases where special trackwork is required. We have had no occasion to use pre-curved rails in the past and it is very doubtful that any situation requiring their use will arise in the future.

No Reason to Pre-Curve Rail

By H. C. Koch
Roadmaster, Belt Railway of Chicago, Chicago

For curves over which standard equipment is operated there is no reason to pre-curve rail. When two rails are securely bolted together they can be lined and spiked to proper curvature. Good-fitting angle bars should be used.

Circle rails for turntables and rail for curves on some narrow-gauge mine or industrial tracks may require pre-curving. A shop that

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Answers to the following questions are solicited from readers. They should be addressed to the What's the Answer editor, Railway Track and Structures, 79 W. Monroe St., Chicago 3, and reach him at least five (5) weeks in advance of the publication date (the first of the month) of the issue in which they are to appear. An honorarium will be given for each published answer on the basis of its substance and length. Answers will appear with or without the name and title of the author, as may be requested. The editor will also welcome any questions which you may wish to have discussed.

To Be Answered In the February Issue

1. What precautions should be taken when building up engine burns by welding? What are the limitations, if any, of this method? Why? Explain.

2. What can be done to prevent the formation of deposits on the undersides of shop roofs due to exhaust fumes from diesel engines? What is the best method of removing such exhaust fume deposits? Explain.

3. What is the minimum daily on-track working time which will justify the use of a highly mechanized tie-renewal gang? What factors affect this minimum? Why? Explain.

4. What special precautions, if any, should be taken when laying continuous-welded rail over long open-deck bridges? Why? Are there any restrictions governing the use of long rail on such bridges? Explain.

5. The reorganization of track-maintenance forces on some railroads has reduced section gangs to skeleton organizations or absorbed them completely in larger gangs. What has been gained from the standpoint of economy and efficiency in the prosecution of maintenance work? What has been lost? Why? Explain.

6. How often should a deep-well pump be inspected? How should this inspection be made? If repairs are necessary, how can such a pump best be pulled? What special equipment, if any, is required? Explain.

pre-curves rail for special frogs and switches would have the equipment necessary to pre-curve rail for such short-radius curves.

A good rail bender or "Jim-Crow" is required to pre-curve rail in the "field." Rail should be marked off so that the bender will be used at close and equal spacings along the rail. Approximately the same pressure should be applied at each point. The offset required for a certain length of rail can be figured in advance. If heating is required the rail should not be overheated. Don't bend the rail too much at one time. A good job will require moving benders along the rail several times. A short piece of rail securely bolted to the rail being pre-curved will allow use of the bender within the limits of the joint. Offset distances should be checked frequently at various locations to insure regular curvature along the entire rail length. It is preferable to bend the rail a little less than the curve requires.

On the "Belt" curve rails are not pre-curved. The above method was used in an emergency to curve several turntable rails.

Solve Question in the Field

By R. V. Dangremond
Roadmaster, Elgin, Joliet & Eastern, Gary, Ind.

In determining the necessity for pre-curving rail to be laid on curves one should consider the degree of curve, weight of rail to be laid, type of equipment using the track, type of tie plates to be used and, to some extent, the type and amount of ballast used to hold the track in line.

In switches and on curves of 22 deg or sharper (i.e., No. 6 turnout) we have made it a general practice to pre-curve rails of 100-lb section or heavier. Rails of lighter weight (85 lb and under) are not pre-curved unless the degree of curve is 30 deg or more.

The above is, more or less, a "rule of thumb" and is used as a guide when considering the effect of other factors mentioned above. For example, if we are going to lay the rail in a No. 6 turnout on a track where standard equipment will operate and the rail to be laid is of 100-lb section, the ballast is good with full cribs, the rail fully plated and spiked, we will not pre-curve the rail because we have found no adverse effects resulting from rail not pre-curved under these conditions.

Of course, where standard equipment is being used on the track it is important that good alinement be maintained on the sharper curves to avoid sharp spots or "kinks." Conversely, where short-wheel-base equipment is used on mill tracks, etc., the alinement is not as important a factor and pre-curving need not be done except on curves of 30 deg or more.

We have made many installations of track with light rail sections (85 lb or less) on curves up to 30 deg with no adverse results because these lighter rail sections quickly adapt themselves to curves under traffic.

Tie plates naturally play a big part in holding rail to good alinement on curves, particularly the double-shoulder plates, which, if used, eliminate the necessity of pre-curving rail on some curves of 20 to 30 deg when lighter rail sections are used.

If a curved track is well ballasted with tie cribs full, as is generally the case in yards and terminals, alinement is more easily maintained and pre-curving is not a necessity on lighter curves.

It follows from the above that the question of when to pre-curve rail is a problem that must be pretty much solved in the field. Its solution depends on the factors named, and no hard and fast rule should be set up to cover all cases.

We are still using several of the old type "Jim Crow" rail curvers on our railroad for pre-curving but the standard rail bender is also used to make a succession of short bends along the length of the rail. The most exact method, of course, when pre-curving is to use ordinates measured from a tight string stretched between the ends of the rail but a foreman who has had experience in pre-curving can for all practical purpose do a good job by eye.

For close-fitting circle rails for turntables we have found it better to order the rail pre-curved specifying the curvature, and have them pre-curved by machine at the mill.

Cutoffs of Untreated Piling

Does capillary attraction in the wood permit cutoffs of untreated timber foundation piles above water level? If so, how far above high, low or normal water table can untreated piling be cut off and still be safe from decay in silt-type soils? Explain.

Ground Condition Controls

By H. S. Rimmington
Bridge Engineer, Canadian National, Winnipeg, Man.

I doubt if we have ever given any thought to this matter as such. The condition of the ground is the controlling factor, and at foundation level this is invariably moist enough that there is no need for concern as to whether the foundation piling will ever dry out. Untreated cedar piling is used.

Foundations are usually set a minimum of seven feet below the nearest natural ground line to avoid effects of frost action. At such elevations the ground will be moist irrespective of the relation between this elevation and stream level or ground-water elevation.

The only exceptions to this will occur when a small abutment is set high on a steep bank or when a substructure element, usually an abutment, is built in an embankment or made fill and the foundation elevation is above natural ground. In such cases treated fir piles will be used if a timber pile foundation is called for.

Our territory covers all Western Canada from Fort William at the head of the lakes to the Pacific Coast.

On this territory we have over fifty miles of timber trestles, all of which were originally constructed with untreated piling, usually cedar.

Generally speaking, rotting in these piles is confined to the area two feet above or below ground line.

We continually come across old pile stubs which are still sound below this danger area. About the only exception to this rule is in certain areas northwest of Edmonton where cedar piles have a relatively short life and deterioration extends below ground. In such territory treated piles are being used.

We have no record of a failure of a substructure element due to

failure of untreated timber foundation piles. It is not known whether absence of failure is due to capillary attraction in the wood or to natural moisture in the ground. Cut-off is not related to water levels.

A Realistic Approach

By Leo D. Garis
General Bridge Inspector, Chicago & North Western, Chicago

After 25 years in charge of inspection of all kinds of bridges, including old substructures, I am sure I could not give an accurate, categorical, scientific answer to this question. It would have to be answered by very practical consideration. Climate is of the utmost importance. In Northern Wisconsin the rule is that piles last forever just under the grass roots. In Wyoming, the rule is that piles decay rapidly down to the point. In both Wisconsin and in Wyoming there are exceptions to these rules. Between these widely varying climatic conditions, you will find varying rates of decay and a great variety of soil. For decay of wood there are no rigid rules. There is, however, the fact that continually very wet or very dry wood has lasted for thousands of years.

If I were asked to settle this question at some specific site and the answer was not apparent, I would proceed as follows: Grab a round-nose shovel, get in an old car and start looking for an *old* pile bridge, telephone pole or fence post where the soil, moisture and temperature conditions were the closest to those at the specific point. A little use of the shovel would show where decay stopped. I cannot imagine a county where you could not find a dozen specimens to sample. After considering this data on a dozen samples, any one could make an intelligent decision.

A less scientific but quite reliable way to decide on a specific point of decay would be to ask an intelligent B&B foreman who had spent years stubbing piles and framing bents. He would not know what capillarity meant but he could tell you where a pile would start to rot in his own territory.

Pennies Saved May Mean Expense

By Field Engineer

This question appears to contemplate a cost saving—either of the price of treating timber piles, or the price of sufficient footing material to reach below the water table.

Decay of timber progresses most rapidly under conditions where it is exposed to both water and air, for example the range from low to high tide, or at the mud line. Mere presence of water is not sufficient to prevent decay; the exclusion of air is essential. This will occur only below permanent water table.

The safe rule is to make cutoffs of untreated timber piling below the level of permanent ground water.

It is well to bear in mind that in many locations this level has changed considerably over the years as a result of drought, land reclamation projects, heavy pumping of extensive well systems and other causes.

A proper method of construction will not add greatly to the cost of the structure. The cost of forming and pouring concrete for footing blocks is usually low, and extending these downward a foot or two will add little to the building cost. In a smaller structure, creosoted timbers can be used to crib up from a cutoff elevation below water level to a higher sill elevation. There is also the "composite" pile composed of a lower untreated pile with a creosoted section spliced on top. This is driven as a unit until the splice is below ground-water level. In swampy areas, where quite long bearing piles are required yet the water table is high, this type is worth consideration.

Pennies saved in construction costs are frequently at the expense of many dollars of maintenance funds at a later date.

Cutoff at Low-Water-Table Level

By Shirley White
General Bridge and Building Supervisor, Southern Pacific, San Francisco, Calif.

I consider cutoffs of untreated foundation piles should be made as nearly as passible to the low-water-table level as conditions will permit.

While capillary attraction in the wood will keep the piles saturated at a higher elevation than water-table level, the variation in degree of saturation may promote rather than prevent decay.

Cutoff of untreated foundation piles above water level should be made only when silt-type soils around piles will retain sufficient moisture to exclude air.

Tilt-Up Wall Construction

What are the advantages, if any, of "tilt-up" wall construction when compared with conventional construction in railway buildings. Disadvantages? Explain.

A Distinct Construction Type

By W. G. Burres
Railway Representative, Structural & Railway Bureau, Portland Cement Association, Chicago

Tilt-up construction is a subject I enjoy discussing for, as a distinct type of construction, it has much value. For those unfamiliar with it, tilt-up is a special form of precast concrete construction in which generally the walls are cast in a horizontal position on the job site, tilted to the vertical position, set in place and made an integral part of the completed structure. As the method is so versatile, it can be used in the construction of many different types of structures. Each designer and builder has special details of design, erection and construction developed with experience, yet all changing with the constant search for improvement. Even small changes in tilt-up design or construction procedure can pay off in appreciable savings in time and money so it is particularly advantageous for designer and constructor to consult on ways and means of construction.

What advantages make tilt-up construction worth consideration? Essentially, they are savings in time and money. Construction time is relatively short with tilt-up. Time consuming form construction or setting of thousands of small units is avoided. On one job (a 45-ft by 80-ft building) a crew of eight inexperienced men set the forms and cast the panels in one day and erected them complete with wall

columns in two days. Once operation patterns are established for a job or jobs, work progresses more and more quickly. Those familiar with the Los Angeles area and who have seen the acres and acres of one-story industrial and commercial buildings have seen the work of contractors and builders specializing in tilt-up.

The casting bed for the precast wall panels usually is the floor slab for the building itself. Simple, inexpensive edge forms are assembled and spotted on the slab as close to the final panel site as possible. Steel reinforcement, either bars or mesh, can be standardized in mats and placed in position if careful design reduces the number of different panels to a minimum. Should panels include windows or doors, the frames may be accurately spotted in the forms, weighted down and subsequent expensive installation avoided. This may be done for electrical conduit and fittings also.

The concrete used is not only more easily placed in the flat, open forms but a stiffer mix is desirable. For equal quality this concrete is more economical than a higher slump mix required for vertical form construction. Concrete in the flat position finishes easier, faster and more effectively with power equipment such as screeds, floats and trowels.

Erection while requiring care and planning is not difficult. A bond-breaker between the slab and panel prevents bonding of the fresh concrete to the floor slab. By means of handling devices cast into the slab, a mobile crane tilts the panel into position. Braces hold the panels firmly until columns joining them can be cast.

The applications of this type of construction for industrial and commercial buildings are almost without limit. Railroads can find uses for it in such structures as warehouses, freighthouses, yard offices, terminal and service facilities. It is not surprising that railroads such as the Southern Pacific, Fort Worth & Denver City, the Cottonbelt and Wabash (see article feature section this issue) have used it successfully in their building programs.

Conditions Determine Advantage

By L. P. Drew

Assistant Chief Engineer, Union Pacific, Omaha, Neb.

The advantages of tilt-up type construction apply principally to one-story type buildings. In the case of buildings of one story with uniform panels or bays, tilt-up construction eliminates the necessity for expensive form work. The panels or bays can all be poured in a horizontal plane, rather than vertically, with only edge forms required when using the previously poured floor as the bottom form. The cost of pouring this type of wall construction is considerably less as no hoist of the mix is required and panels can usually be poured directly from a ready-mix truck without extra spouting or chutes.

The disadvantages are the special equipment required to tilt up the panels after they are cured. Unless a contractor is familiar with the handling of this type of equipment, he will usually bid high for protection. In cities where several buildings of this type have been built and contractors have equipment and are familiar with this type of construction, bids will usually be lower than for conventional types of construction such as brick, concrete block or solid concrete walls.

There seems to be no advantage of tilt-up type over other types of construction from a design standpoint as any type can be calculated to serve the purpose intended. The advantage or disadvantage, therefore, is purely in cost, and this is largely dependent upon local conditions as indicated above.

Summer Shimming of Track

There are locations where comparatively short stretches of track heave excessively during the winter months and require the installation of long stretches of run-off shims on the approaches. To what extent is it permissible, or good practice, to raise these approaches and maintain shims across the heaving area during the summer months to reduce the amount of run-off shimming required during the winter? What limits, if any, should be placed on the maximum amount of summer shimming? Explain.

Safe, Practical and Inexpensive

By General Roadmaster

By way of explanation, there are two distinct types of heaved track. First the early heaving which causes slight irregularities in surface. This is due to late fall rains just before freeze-up. As a result of these rains a considerable amount of moisture is impounded in foul ballast. During the early part of the winter this causes some light heaving in such territories.

Second, there is the heaving that comes later in the winter when the frost has penetrated to its maximum depth in the subgrade. In territories where heaving of track occurs there are locations where the track heaves excessively during the winter months with long stretches of shimmed runoff on the approaches to the heaved spot. I spent several years in northern Minnesota and Wisconsin and have had much experience with this type of heaving.

At the locations where heaving occurs it has been my experience that the same locations heave regularly year after year. The cause is, of course, moisture under the roadbed which changes form when it freezes. The force of this change is exerted along the line of least resistance, which is toward the surface of the ground. The point of heave, or the summit, is seldom more than 5 to 10 ft in length and if this spot heaves 3 or 4 in it requires a runoff of probably 3 rail lengths in each direction.

Now, as previously stated, the same spot will heave year after year unless corrective measures have been taken to eliminate the water either by sub-drainage or other means. We have found through experience with this type of heaving that if the ties at the location of the heave are dug down and lowered about 3 in and summer shims are placed on these ties early in October then, when the roadbed freezes and the track heaves at this point, it is only necessary to reduce the thickness of these shims or remove them. In most such instances little or no runoff is required. Such practice results in better riding track, eliminates the necessity of slow orders to trains, saves on labor and also increases

tie life as the ties are not being spike killed from the continued pulling and redriving of spikes as required in shimming.

It is my opinion that this method is not only practical but safe. The track is not weakened if summer shims are placed in the proper manner. In the spring, when the heaved spot goes down to normal, these ties can be tamped up and the track carried through the summer months in a regular manner and the shims can then be put in again in the early fall.

I have had many years of experience in shimming track. This, in my opinion, is a waste of money and material. The right thing to do is to eliminate the water in the roadbed by some type of drainage. If there is no type of drainage which is able to correct the situation then another good method is to dig down 3 or 4 feet at the point of heave and saturate the roadbed with about a 4-in layer of rock salt. The spot is then covered with ballast material and the track restored. However, of the two methods, summer shimming is the least expensive.

Use Not Approved

By W. G. Dyer

Engineer Maintenance of Way, Canadian Pacific, Winnipeg, Man.

The use of summer shims is prohibited on the Canadian Pacific. While there may be certain advantages in isolated cases in the use of summer shims, it is considered that the disadvantages more than offset the advantages, and that if the use of summer shims were permitted in certain isolated cases, it would be extremely difficult to keep the matter from getting out of hand.

Effective, but Restrict Use

By H. Steele

General Roadmaster, Ontario Northland, North Bay, Ont.

Let me say first that the proper procedure on stretches of track that are comparatively short is to install drainage at a depth that will place it below frost penetration. At the same time all material under track, to the depth of the drainage pipes, should be removed and the space backfilled with clean coarse gravel.

At points where, for any reason such drainage is impractical the use of summer shims is a great labor saver in winter months and also prevents a great deal of spike killing of ties.

At this point I would like to explain a procedure which was used at a certain point on our railway some few years ago. The location was on curved track with 2-in superelevation and about the center of the curve. A section of the inner rail about 35 ft long heaved about 4 in.

To smooth off this inner rail it was necessary to install a runoff on either side of the heaving spot of about 2½ rail lengths. After this was done the outer rail was brought up to proper superelevation. As a result the outer rail was on 4-in shims for a distance of about 6 rail lengths. This was very undesirable.

Later, this heave spot was dug out during the summer and 4-in shims placed over the 30-ft length of the heave. The result—winter shimming was reduced to very light smoothing with ½-in to ¾-in shims.

In winter, when track ties and tie plates are covered with ice, it is most desirable to shim as little as possible, to guard against weakening of the track structure which occurs when the rail is set up on shims. This is especially true on the outer rails of curves.

In conclusion, summer shims can be used to advantage but should be used only in extreme cases and on comparatively short heaved spots (one to two rail lengths) using shims not more than three inches thick.

Never Uses Summer Shims

By J. R. Scofield

Assistant Engineer Maintenance of Way, New York Central, Detroit, Mich.

We certainly have had our share of heaved track, especially during exceptionally cold weather. Particularly, most of these spots occur over sink holes and some occur around road crossings where the drainage has become clogged. However, we have never resorted to maintaining shims on the approaches of these spots during summer months to reduce winter shimming.

To reduce excessive shimming, we have been and are progressing the gradual elimination of many of our bad sink holes by grouting.

Where track heaves badly in the winter time we reduce the amount of run-off shimming by the temporary removal of the tie plates over the heaved locations. We very seldom have to install shims in excess of 1 in. in thickness. We have eliminated the necessity of excessive shimming in certain locations by drainage and cleaning the ballast in connection with our summer work program.

The shimming of track should be avoided wherever possible as it is wasted labor. It is good practice to spend considerable amounts of money in draining and grouting the roadbed to make shimming unnecessary.

Better Spend Money on Drainage

By C. E. Neal

Division Engineer, Northwestern Pacific, San Rafael, Calif.

Preparation of track for winter months is a spring, summer and fall job, particularly in areas where low temperatures are such as to cause heaving of track by freezing. During the months when weather conditions are favorable, everything possible should be done to drain the roadbed, apply clean ballast to insure drainage of the track, clean the ditches and have the track in good condition going into the winter months. This will reduce materially the amount of track that will require shimming. If the water situation is taken care of there will be very little heaving of track as a result of freezing.

It would not appear to me to be a good general practice to have the approaches raised higher at an area or location where heaving was anticipated, and attempt to maintain the track over the anticipated heave area on shims during the summer or warmer months.

Track that is on shims always presents more of a maintenance problem and always requires increased maintenance costs. In cases where track is shimmed for any distance or raised on shims beyond certain well-defined limits, speeds of trains are usually materially reduced. In cases of heaving track due to freezing there is no set pattern governing the movement that takes place. It would seem practically impossible to maintain approaches, to meet an anticipated heave. There really doesn't seem to be any good reason to maintain track on shims during summer months to provide a "cushion" when the track begins to heave. I believe it would be much wiser to spend additional maintenance money on drainage so as to provide a well-drained roadbed, and to apply clean ballast that will drain,

especially in known troublesome areas, than it would be to spend money for maintenance of track on shims during the summer months. Some few railroads may have local conditions that might require the practice posed by the question, but I believe these instances would be few and far between.

Reduces "Spike Kill" of Ties

By Section Foreman

Many of our shimming spots occur in cuts where the drainage is poor and the subgrade becomes frozen in a saturated condition. This causes excessive heaving which necessitates long stretches of run-off shims as a corrective measure.

The majority of our heaves occur at the same location year after year and could be eliminated by digging to frost level and backfilling with cinders, gravel or rock. Cinders in particular are very effective in counteracting severe heaving.

In many instances there are not sufficient forces or insufficient time to do this work. As a result, the section foreman's only recourse in the prevention of excessive winter shimming is the installation of "summer shims" at a few key spots.

The method used by many foremen is to dig down the ties so that a shim equal in thickness to the amount of the average heave can be placed on top of the tie. The thickest shims should be placed at the center of the heave and reduced to ¼ in at each end. When the track heaves during the cold weather the summer shims can be reduced in thickness as required and when the maximum heave has occurred all the shims will be out and the track in good surface. Summer shims are very time saving when the heave is confined to a few ties under one rail. By removing the shims when the track heaves no run-off is required and the opposite rail does not have to be levelled up as would be necessary if summer shims were not used.

This shimming method has several good features including a saving in tie renewals at these locations. The only ties that will eventually become spike killed or split on account of excessive shimming are the ties under the summer shims. On the other hand when a long runoff of say 50 to 60 ft in both directions is required, the life of many ties is reduced from 30 or more years to 6 or 7 years. This loss of tie life would make an impressive total on one heavy-shimming division.

A reduced winter force will remove shims from three or four locations in less time than it would take to shim one long approach. This would enable the section gang to utilize the time saved in the performance of other winter duties.

Usually after a prolonged cold wave of forty-below-zero weather we are confronted with numerous heaves that require immediate attention. It certainly would be much faster to reduce the high spots by taking out a few shims than shimming time-consuming approaches. Faster shimming would also tend to reduce the use of slow orders.

Track that heaves to 1½ in should not require summer shims as the runoff required would not warrant placing the shims. Consideration should be given to installing shims only where the track comes up more than 2 in. The foreman in charge should use his own judgement as conditions and speed restrictions vary. Foremen on branch lines where slower trains operate could probably get by without using the shims. Their indiscriminate use should not be tolerated.

Shrinkage of Stone Ballast

What causes shrinkage of stone ballast? How much would this amount to in track surfaced out of face every three years? Explain.

Three Principal Causes

By G. B. McClellen
General Roadmaster, Texas & Pacific, Fort Worth, Tex.

The principal cause of ballast shrinkage are:
(1) Sinking into soft subgrade.
(2) "Dusting" of pervious stone as a consequence of absorption of water and subsequent freezing.
(3) In minor degree compaction, the shifting of the pieces of stone into closer contact, thus reducing the volume of the voids.

The remedies for causes Nos. 1 and 2 are obvious, although they are by no means always easy to apply. The loss of ballast by sinking into the subgrade can be prevented only by some method of subgrade stabilization, such as solidifying the roadbed with "sand piles" or "sand blasting," or by pressure grouting; in soil formations where the instability does not extend too deeply, the construction of a "vertical corduroy" by driving rows of poles in the edges of the berm has been found to afford great relief.

It goes without saying that roadbed stabilization by any of these methods, while necessarily quite costly, will also afford relief from costlier troubles than the necessity of replenishing the ballast section.

It has long been well known that hard, tough stone that does not absorb water is superior to soft and absorbent stone as a ballast material. However the full difference in value is not always realized. It is poor economy to struggle along with an inferior ballast, which will soon become foul, when good ballast is procurable at even double the price.

Given a hard, sound roadbed and the right kind of ballast, shrinkage is minimized regardless of the length of the resurfacing cycle.

Shrinkage Over-Emphasized

By John L. Dell
Track Supervisor, Baltimore & Ohio, Garrett, Ind.

The principal cause of ballast shrinkage is the abatement of voids left in ballast when placing and tamping. The irregular shape of individual stones prevent their "nesting" or fitting together when tamped, thus allowing the formation of voids which may, depending upon the size of ballast used and the method and effectiveness of tamping, amount to as much as thirty per cent of the ballast.

Some ballast is broken and crushed both in tamping and under traffic pressure. The fines created will gradually sift into the voids and result in further shrinkage.

This writer feels there is a tendency to over-emphasize shrinkage of ballast. With steam power disappearing, most roads are faced

with a shortage of cinders for fill and banking material. Naturally they hesitate to buy cinders or slag for this purpose. As the banking recedes it is necessary to apply more ballast to the shoulder in order to properly protect line and surface. Few of us realize how great an amount of ballast is used for this purpose. Even with an ideal banking height, about a third of the ballast section in on the shoulder and inter-track space. As the banking recedes this proportion increases very rapidly.

Our railroad maintains a standard berm at a 16-in minimum and 19-in maximum depth below the top of tie, and with a defined ballast line 60 in from the gage of the rail. We dress ballast 2 in below the top of tie and make a 6-in slump in the intertrack space. We find that we can generally raise track with five 60-ton cars of ballast per mile for each inch of track raise. We find it most desirable to make a conservative raise without dragging new ballast and then replenish the ballast after resurfacing. Since the greatest shrinkage occurs in the first year, we have found that our 5 car-per-inch-per-mile rule is sufficient for even a five-year resurfacing cycle.

Removing Algae from Water

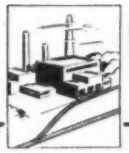
What is the most effective method of removing algae from water to be used in boilers and cooling systems? Explain.

Suggests Proprietary Compound

By L. C. COLLISTER
Manager Tie & Timber Department, System, Atchison, Topeka & Santa Fe, Topeka, Kan.

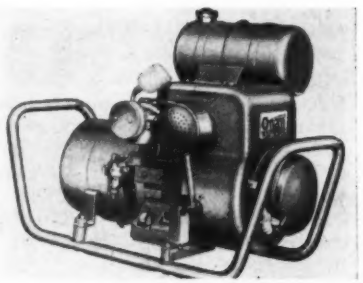
A very good control is obtained by the use of Dearborn Santobrite sodium pentachlorophenate at the rate of 20 ppm (1/10 lb for 1,000 gal). The first application might well be 30 ppm which will kill all algae. Depending on local conditions, repeat treatments of 20 ppm will be necessary every week to twelve days.

Although this material is more expensive than copper sulphate, the cost of maintaining an algae-free cooling system will be about 75 per cent of the cost of copper sulphate control.



PRODUCTS OF MANUFACTURERS . . .

. . . new, improved equipment, materials, devices



LIGHTWEIGHT GENERATOR

A LINE of extremely light weight electric generator sets, available in two models, has been announced by D. W. Onan & Sons Inc., Minneapolis, Minn. These models are an addition to the AK Series and are offered as two versions of Model 105 AK. One is known as 105AK-1M. It weighs 130 lb and is designed for stationary service but with optional carrying frame and two-wheel dolly. The other, known as 105AK-1P, weighs 125 lb and is equipped with a tubular aluminum carrying frame as standard equipment.

Both models are rated at 1,500-watts, 60-cycle ac. They are completely Onan built units. The generator is direct-connected to a 4-cycle, heavy-duty, air-cooled gasoline engine. They have extra-large, long-life bearings, Stellite-faced exhaust valves with solid Stellite exhaust inserts, built-in governor and high-tension, radio-shielded magneto ignition. It is reported that these units will operate for about 3 hr at full-rated load on 1 gal of gasoline.

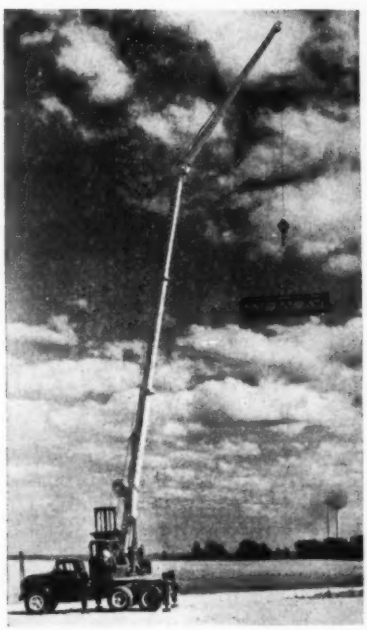
ALL-HYDRAULIC CRANE

A NEW HYDROCRANE, known as model H-5, has been announced by the manufacturer, the Bucyrus-Erie Company, South Milwaukee, Wis.

The crane is designed to be mounted on a new or used conventional motor truck which eliminates the need of a crane carrier. With this arrangement, and depending on truck selection, it is claimed that this equipment conforms to state highway regulations restricting width, height, load limit, etc.

The new crane has an 18,000-lb maximum lift. Attachments are available which include a low-headroom type, dual-ram, ½-cu yd clamshell bucket and a 39-in diameter lifting magnet which is powered by a 5-kw generator driven from the crane's deck-mounted power plan. The crane may be equipped with either a standard two-piece boom (telescoping from 24 ft to 36 ft long) or an optional high-lift, 3-piece boom (extendible from 38 ft to 50 ft long). A quick-connect jib is available for either the standard or high-lift boom and provides a maximum clear lift under the hook of 72½ ft at minimum radius when used with the high boom.

The new machine is equipped with four patented outriggers



which are reported to provide increased stability, greater leverage without counterweight, and instant leveling. The boom folds over and rests on the truck cab during travel and it is reported that the equipment can operate at travel speeds up to 50 mph along the open highway.

All functions of the crane are

"OK MEN—LET US NOW CONSIDER THE PROGRAM WE ARE TO SUBMIT TO THE CM&W RAILROAD FOR 1956"

"Their treatment this year was disappointing. They now come to us. They ask for our recommendation for 1956. What did our fall inspection disclose? What formulation is suggested?"

A typical conference to discuss new developments in Vegetation Control

Forty years of continuous service to the Railroads of America, places us in an enviable position to discuss and offer suggestions for controlling Weeds and Brush on railroad right of ways.

Our staff of highly trained specialists, is constantly alert to evaluate new chemicals, new processes and new procedure. They are men with railroad maintenance know how, chemists who devote their entire time to laboratory and field research, and agronomists who know the name and habits of every type of plant life.

Passing along to the railroads this important, unbiased information, is just a part of Reade's broad and comprehensive service.

Whether the Weed or Brush control program is $3,000.00 or $300,000.00 we endeavor to advise the best selection of chemicals for the particular territory on which the chemical is to be applied.

WE INVITE YOUR INQUIRY

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THE READE MANUFACTURING CO., INC.

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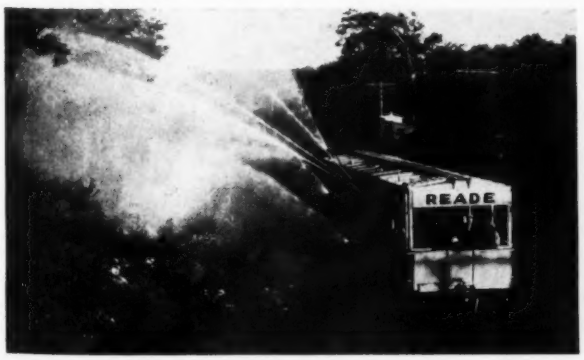


fully hydraulic. Power is supplied by a 75-hp Ford power plant mounted on the crane deck.

LONG-HANDLED PAINT ROLLER

A LAMBS-WOOL roller equipped with an extra-long handle is a new development of the Rust-Oleum Corporation, Evanston, Ill. This roller is designed for use in coating hard-to-reach wire-fence sections. It is provided with a double-grip hardwood handle, 10 in long and a wire-connecting shaft which permits an overall reach of 20½ in. It is said that this will enable an average worker to coat both the top and bottom sections of a wire fence up to 9 ft high. The roller is 7 in wide and is covered with 1½-in extra-thick lambs wool. This extra nap is reported to reach around the wire to coat about 70 per cent of the other side of the fence. It is claimed that the combination of the longer handle and long roller nap assures faster and more thorough fence coverage and longer roller life.

SIGN REPAIR KIT

PRISMO REFLECTO-KIT is an all new kit containing the necessary materials to revitalize road signs and markings which have been damaged by severe winter weather, according to an announcement by the Prismo Safety Corporation, Huntingdon, Pa. It is said that this "moisture-pruf" coating is easy to use and lasts from 5 to 7 years without blistering and peeling. It is further reported that the material is suitable for all types of traffic signs, markers and railroad rolling stock.

CONCRETE VIBRATOR

A MACHINE which is said to combine high performance as a concrete vibrator with broad versatility through the use of attachments for surfacing, sanding, wire-brushing, grinding, grouting, pumping, drilling, buffing and polishing has been announced by the Mall Tool Company, Chicago. This machine is the Mall Model 8GV 21 vibrator. It is powered with a 2-hp, 4-cycle, single-cylinder gasoline engine which is mounted on a 360-deg swivel base and which weighs 38 lb.

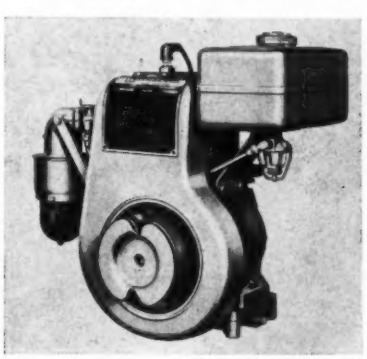
The engine operates at 3600 rpm. The unit is equipped with 12 ft of 0.7-in diameter shafting and a 2⅜-in diameter by 14-in long vibrator head.

The manufacturer claims that the small diameter shafting allows a peak radius bend of 8 in, and that the rubber-covered housing resists abrasion on the edges of the forms and seals the shafting from abrasive cement particles and corrosive water.

The unit is equipped with a 2-qt gasoline tank which it is said has sufficient capacity to permit operation of the vibrator at full throttle for a minimum of four hours without refilling.

AIR-COOLED ENGINE

A SINGLE-CYLINDER, 4-cycle, air-cooled engine, rated at 3.2 to 6.8 hp in the speed range of 1,600 to 3,600 rpm, has been announced by the Wisconsin Motor Corporation, Milwaukee, Wis. It is stated that the motor incorporates new engineering features that result in higher output of power per cubic inch of piston displacement. The new engine, known as Model BKN, has a 2⅞-in bore, a 2¾-in stroke and



a piston displacement of 17.8 cu in. It is available with various gear reductions, clutch assembly, electric starter and generator or starter only, and can be equipped to op-

RACINE
Hydra-Quad TAMPER
(Patent Pending)

Just one man operates this four-tool ballast tamper

Here's a completely hydraulic machine that tamps more track per man per day . . . and does it more uniformly. One operator controls the vertical movement and lateral position of four tampers through two finger-tip hydraulic valves. *Each tamping gun acts independently to insure full compactness of ballast at all points.* All four tamping guns automatically tilt to carry ballast under the tie at proper depth. To accommodate crooked ties, the operator simply swivels the main head.

The Hydra-Quad tamper is easy to adjust for varying rail heights and wider-than-average ties. Each gun is equipped with a quick-change tamping bar holder.

Drop-down and outboard wheels insure easy removal from track. Hydraulic cylinder raises and pivots the machine. Power winch assists in rerailing. Movement from tie to tie is powered by a fluid motor that also operates the power winch.

One more flexibility feature: Off-center outrigger mounting permits two men to operate machines on opposite rails to tamp both tie ends simultaneously. Send for free folder and specifications. Address **RACINE HYDRAULICS & MACHINERY, INC.,** 2038 Albert St., Racine, Wisconsin.

Lease or time purchase plans are available.

RACINE

HYDRAULICS & MACHINERY, INC., RACINE, WISCONSIN

erate on kerosene, butane, or natural gas although it is regularly supplied for operation on gasoline.

COMPARISON shows extra coverage of Tapecoat X single-wrap method in contrast to double-wrapping with same length of regular tape.

COAL-TAR TAPE

IN THE September issue a single-wrap coal-tar tape for use on pipe, pipe joints, fittings and couplings was described. The manufacturer is the Tapecoat Company, Edison, Ill. A photograph presented with the item was not accompanied by an adequate explanation. The picture is reproduced herewith along with a caption explaining its significance.

INTERLOCKED GRATING

T-BAR GRATING designed for use with concrete or asphaltic filler, is the newest addition to the line of electro-forged steel and interlocked grating manufactured by the Blaw-Knox Company, Pittsburgh, Pa. It is reported that the advantages of this flooring include the elimination of the necessity for concrete forms; increased bearing capacity; ability to handle rugged loads; and reduction of dead weight.

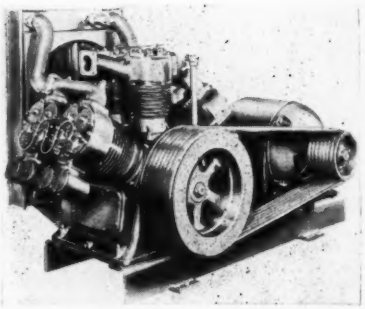
The T-Bar panels can be made up in 3-ft by 20-ft sections and cut to desired dimensions. The T's used in construction of the grating may be from 1 in by 1 in by ⅛ in up to 6 in by 6 in by ½ in according to the bearing strength required of the flooring. The grating is formed by pressure interlocking.

AIR COMPRESSORS

A LINE of two-stage, air-cooled, electric-motor-driven air compressors has been introduced by the Le Roi Division, Westinghouse Air Brake Company, Milwaukee, Wis. This line includes 50, 75, and 100-hp units having displacements of 260, 415 and 550 cfm, respectively, at 125 psi operating pressure. It is reported that the balanced design of the 3-cylinder model 50S2 and the 6-cylinder models 75S2 and 100S2 reduces vibration and noise to the minimum.

Cylinders are of alloy iron and are cooled by a high-speed, belt-driven fan which draws air through a sectional-core intercooler and directs it over the cylinders and heads.

Each bank of cylinders has individual intake filters. Forced-feed lubrication by a positive plunger-type oil pump is said to add to dependable service with the minimum of attention.



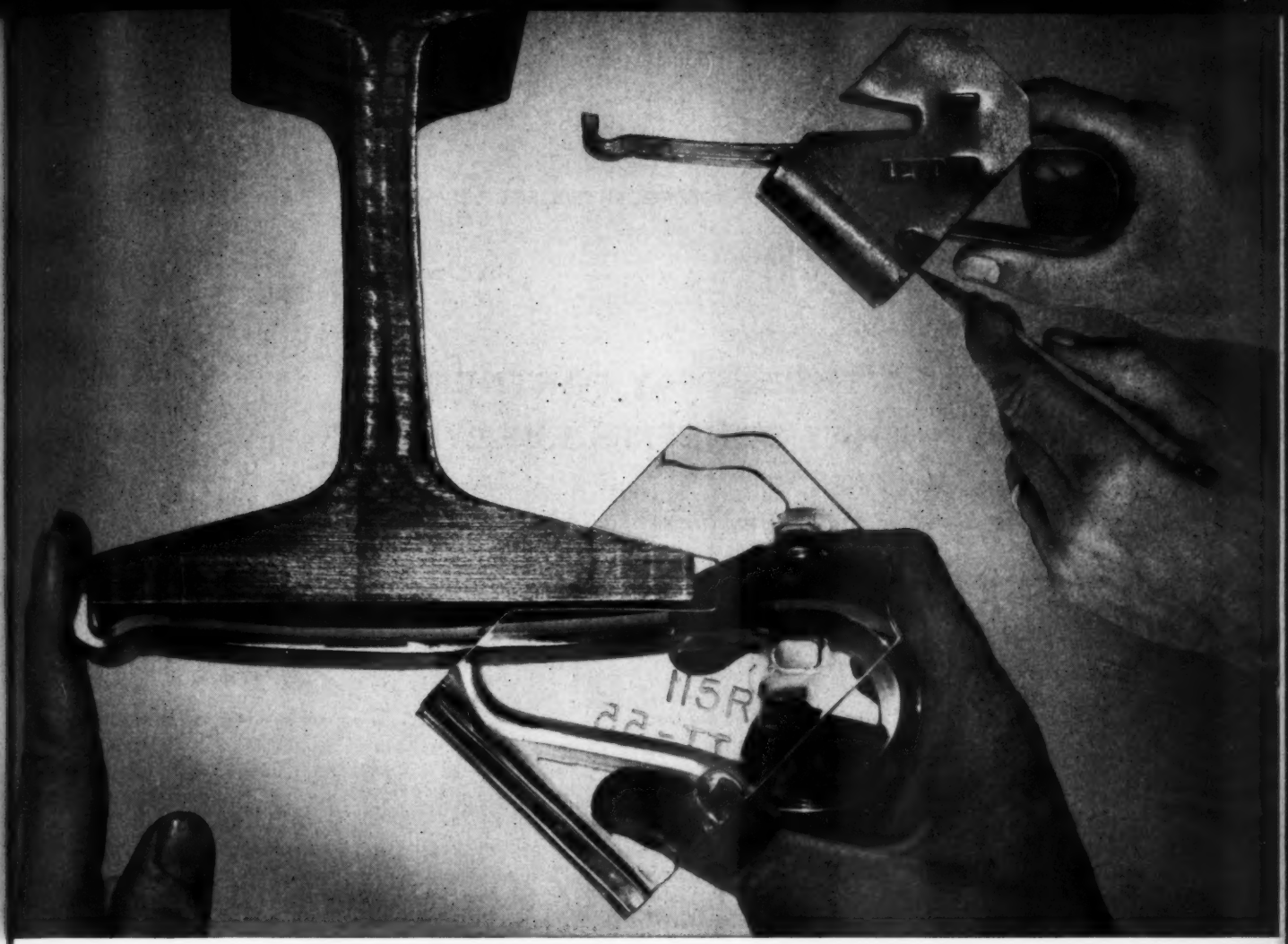
6-CYLINDER model typical of 75S2 and 100S2 compressors

Standard equipment for the belt-driven compressors includes a dual control. This gives the operator a choice of start-and-stop duty of both motors and compressors or a continuous running of the motor with intermittent compressing. With the latter selection the compressor cylinders are permitted to unload instead of compressing when desired pressure is reached.

RUBBER DEVICE AIDS SIGN REFLECTORIZING

EMBOSSED SIGNS are said to be easier to reflectorize with "Scotchlite" brand reflective sheeting by the use of a new rubber diaphragm announced recently by Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Made of rough rubber, the diaphragm, which is for use in heat-vacuum applicators, allows air trapped by raised letters and borders to escape through evenly spaced, microscopic depressions in the surface of the rubber. Previously, shops reflectorizing embossed signs used seamless muslin or "bleeder" strips to allow the air to escape. The new diaphragm has become standard equipment on heat-vacuum applicators, and replacement diaphragms are available for the 4-ft by 6-ft and 5-ft by 12-ft applicators.



TRANSPARENT MODEL SHOWS WHY

New BULLDOG Rail Anchor has 25% greater holding power

This transparent plastic model shows why True Temper's new BULLDOG rail anchor has 25% greater holding power than our previous anchor, which itself was noted for high anticreep properties.

The new BULLDOG anchor has a powerful two-way grip. The anchor spring is under high tension and it *pulls* the clamp against the rail, like hand at left above.

That's also how our previous anchor gripped. But in the new BULLDOG the anchor spring is also under heavy *compression*. It pushes upward so that the rail base is squeezed between spring and clamp. Thumb and forefingers, above, illustrate this action.

To put the anchor spring under compression—and raise holding power—we forged new lugs into the anchor clamp. Pencil above points to lug.

Ideal for Welded Rail

With its powerful two-way grip, the new BULLDOG will retain its holding power through years of service and on reapplication—even better than its predecessor. It's the ideal anchor for all applications and especially where high anticreeping properties are required, as on welded rail.

The BULLDOG anchor is applied as one unit by one man using any striking tool. It fits new or worn rail. The world's easiest anchor to apply.

Write for free copies of our new brochure and also our handy application chart. True Temper Corp., Railway Appliance Div., 1623 Euclid Avenue, Cleveland 15, Ohio.

BULLDOG Shovels, Scythes, Forks and other
TRUE TEMPER RAILWAY TOOLS

TRUE TEMPER® BULLDOG RAIL ANCHOR

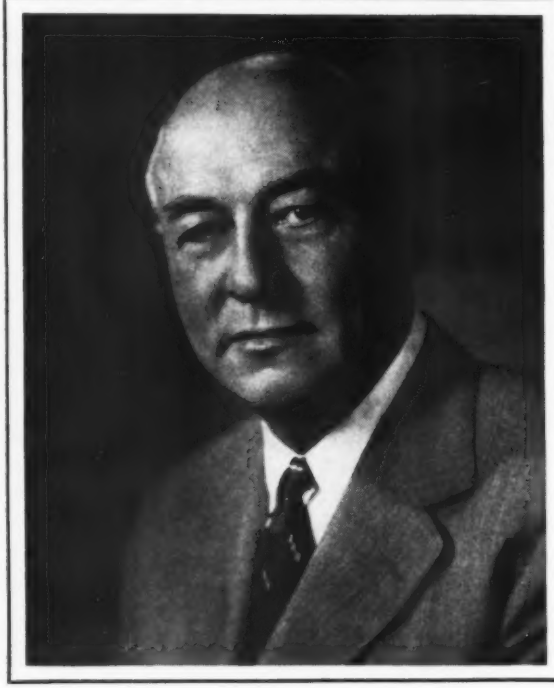
25% greater holding power . . . one unit . . . applied by one man . . . using any striking tool

AN IMPORTANT MESSAGE FROM THE SECRETARY OF THE TREASURY

A THREE-WAY PARTNERSHIP THAT BENEFITS EVERYBODY

How the public, the magazine publishers and the U. S. Government cooperate to help keep the nation's economy growing always stronger

As a reader of this magazine, the chances are that you belong to a "three-way partnership" dedicated to intelligent saving and a sound economy. For you probably buy United States Savings Bonds. Nearly 40 per cent of the families in America own them. Most Bond-owning families have saved enough in this way to pay for a serious illness, to provide something for old age, to make a down payment on a house or take a long trip. And perhaps most important, these families have the wonderful feeling of security that the ownership and holding of these Bonds bring.



Americans today are buying Savings Bonds at an annual rate of more than $5,000,000,000. In the time it takes you to read this page, approximately one minute, America will buy $10,000 worth of Series E and H Bonds!

How, you may ask, did this come about?

It came about through a great program of voluntary cooperation with the Treasury Department on the part of many groups, organizations and citizens. The magazine publishers have from the beginning been among the major supporters of the Bond program. They contribute millions of dollars' worth of advertising space each year.

Full credit for making Bond-buying a national habit is due that "three-way partnership"—the American citizen, the Government, and the volunteer groups, such as the magazine publishers, who bring buyer and seller together through the pages of their publications.

All three partners will profit further by continuing to help increase the nation's saving through the sale of Savings Bonds.

For so effectively promoting the national welfare I wish, on behalf of the Government, to extend to the magazine publishers our most sincere thanks.

Secretary of the Treasury

"WE BOUGHT OUR *Second** ORTON CRANE

BECAUSE . . .

"The ORTON crane delivers more actual hours 'on-the-job' work than any crane we've ever owned!"

(One reason is that an ORTON is so easily maintained. With all its modern developments, ORTON cranes have not sacrificed easy access to working parts.)

Don't overlook that an ORTON not only delivers more working hours, but, Air-operation and

Torque-Control

makes operating hours *less fatiguing* to man *and* machine! The *efficiency* of patented power-through-fluid Torque-Control *is unapproachable by even the most complicated mechanical or electrical systems.* Torque multiplication is *always* and *instantly* at the *exact* load requirement.

ORTON
CRANE AND SHOVEL CO.
608 S. DEARBORN ST., CHICAGO 5, ILLINOIS
Send for Catalog No. 84

* Send for a list of ORTON purchasers who have bought three or more cranes since the application of Torque-Control. We want you to base your decision on the testimony of ORTON owners.

THE MONTH'S NEWS...

. . . among railway men—the associations—the suppliers

Changes in Railway Personnel

GENERAL

W. T. Bryant, assistant roadmaster on the St. Louis-San Francisco, has been promoted to assistant trainmaster of the Eastern division with headquarters at Springfield, Mo.

R. L. Milner, staff engineer on the Chesapeake & Ohio, has been appointed staff assistant to vice president—construction and maintenance, with headquarters at Huntington, W. Va. Mr. Milner graduated from Ohio State University in 1926 and joined the C&O the following year as assistant cost engineer at Walbridge, Ohio. In 1938 he was made supervisor of track at Logan, W. Va., and was promoted to division engineer at Covington, Ky., in 1941. From 1945 to 1952 he was with the company's transportation department in Richmond, Va., and at the end of that period he was appointed staff engineer in Huntington.

ENGINEERING

Utley L. Burlock, has been appointed assistant to the superintendent of bridges and buildings of the Bangor & Aroostook, with headquarters at Houlton, Me.

E. L. Vogt has been appointed assistant valuation engineer of the Southern Pacific Lines in Texas and Louisiana, with headquarters at Houston, Tex., succeeding **W. F. Sanders** who has retired.

W. C. Davidson, assistant engineer, Eastern division, and **H. L. Gastler,** assistant roadmaster, Eastern division, of the St. Louis-San Francisco, have been appointed to the newly created position of assistant process engineer with headquarters at Springfield, Mo. **H. L. Woldridge** is process engineer, having been appointed to that position several months ago.

Wesley M. Martin, track supervisor on the Maine Central with headquarters at Brunswick, Me., has been promoted to division engineer at Bangor, Me., to succeed **Harry Homans** who has retired after more than 44 years of service with this road.

C. V. Lund, assistant engineer on the Milwaukee Road, has been promoted to assistant to chief engineer, with headquarters as before at Chicago. A native of Minneapolis, Mr. Lund graduated from the University of Minnesota with a degree in civil engineering and started with the Milwaukee's engineering department in Minneapolis in 1927. After serving three years at Aberdeen, S. D., he was transferred to Chicago in 1931 as assistant to general supervisor bridges and buildings. He has been assistant engineer since 1940.

Andrew Den Bleyker, assistant chief engineer of the New York, Susquehanna & Western, has been promoted to chief engineer at Paterson, N. J., succeeding the late **O. A. C. Thorsen,** whose death on August 27 was noted in the October issue. Mr. Den Bleyker, was born at Paterson on July 23, 1908, and received his engineering degree from Newark College of Engineering. He began his railroad career with the Erie in April 1937 as a rodman in the division engineer's office at Jersey City, N. J. Later he worked as signal helper, work equipment operator, carpenter helper and levelman on the New York division. When the NYS&W began operating on its own in March 1940, Mr. Den Bleyker became a levelman in the engineering department. After service in the United States Navy from November 1942 to December 1945 he returned to the Susquehanna as assistant engineer, becoming assistant chief engineer last August 29. His appointment as chief engineer became effective September 15.

Lewis P. Diamond, consultant to the superintending engineer on the materials laboratory at the New York Naval Shipyard, has joined the Chesapeake & Ohio as assistant engineer-research, assigned to the operations research group. Mr. Diamond, a native of New York, is a graduate of New York University. From 1941 to 1945 he was connected with the U. S. Navy Department

NOW GRAVELY Gives You Push Button Snow Removal!

New Gravely Self Starter . . . Choice of 3 Snow Removal Tools!

A new experience in snow removal — simply push the button and your Gravely Tractor is ready for the toughest snow removal job! . . . The only 5-HP Tractor offering a choice of Snowblower, Snowplow or Power Brush for snow removal —choose the tool to fit your particular job. Too, this one tractor offers 23 attachments to choose from for year 'round grounds maintenance tasks. From 75" gang mowers to 48" Snowplow, the Gravely saves time and money all year!

Write for catalog—TODAY!

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Economical

HOUSING for REPAIR CREWS

"Off the Road"

RICHARDSON mobile units furnish an economical way to house repair crews, keeping repair trains off the road. These mobile units sleep crews comfortably. Many railroads have found the use of these RICHARDSON units a practical and convenient manner in which to move crews from place to place.

For complete information and prices write directly to the RICHARDSON factory.

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If you are a young man with a vital interest in the industry of your choosing—ambitious, alert and desirous of advancement—then here is your opportunity to subscribe to a magazine which gives you railroad information that will supplement your experience in your department—and help you get ahead.

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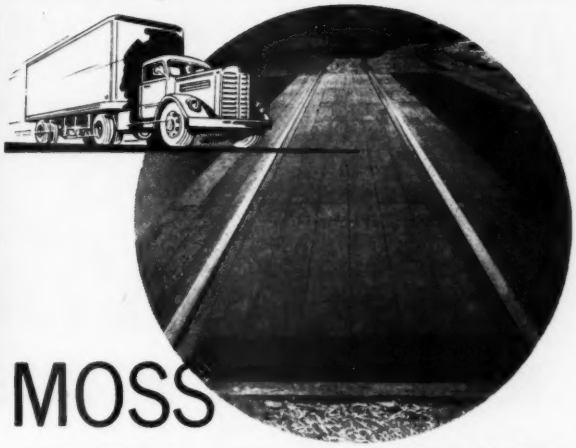


MOSS

PRESSURE TREATED CROSSINGS

4 Through Bolts Instead of 3 in the Assembled Slab Mean

- GREATER STABILITY
- LONGER LIFE
- SMOOTHER RIDING

It's the latest development in Moss' continuing search for ways to provide stronger, smoother and more durable railroad grade crossings. And that's not all. Moss through bolts are now provided with lock nuts that can't shake loose, even under continuous heavy traffic.

More reasons why Moss Crossings are your best investment!

VERSATILE:
Pre-framed for single or multiple, tangent or curved track. Adapted to crossing through railroad turnouts. Suitable for crossings at any angle with track.

DURABLE:
Built of tough, pressure-creosoted black gum, highly resistant to shock and abrasion, with interlocking grain that gives extra resistance to wear. Many have given 15 and more years of smooth, trouble-free service.

EASY TO INSTALL:
Timbers are cut and fitted to your specifications. Can be installed by a small track gang with regular tools. Easy to move from one location to another.

FOR CROSSINGS THAT LAST AND LAST—INSIST ON MOSS CREOSOTED TIMBER CROSSINGS

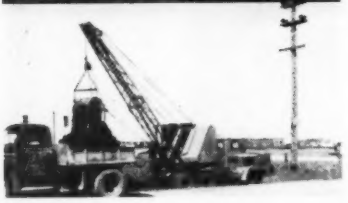
WRITE TODAY FOR FREE BULLETIN

MC **T. J. MOSS TIE COMPANY**
700 SECURITY BUILDING • ST. LOUIS 2, MISSOURI
CROSS TIES • SWITCH TIES • POLES AND POSTS • PILING • CROSSINGS
WOOD PRESERVING PLANTS: E. St. Louis, Ill.—Granville, Wis.—Shreveport, La.—Columbus, Miss.

YOU CAN BUY A BANTAM
ANY WAY YOU WANT IT!

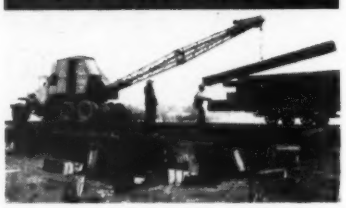
AS A CRAWLER

CARRIER MOUNTED



SELF-PROPELLED

RAIL MOUNTED



There's a model Specially designed for Your jobs!

Whether you're digging a trench, handling materials, erecting steel or pouring concrete, there's a BANTAM to fit the KEY SPOT on that job! Schield Bantam builds just one size machine . . . builds more of them than anyone else . . . builds them to do *more* jobs for you with any of 9 different attachments.

For special applications or routine jobs, there's a BANTAM that can do your work faster with more profit for you! Find out about a BANTAM before you buy any ⅜ yd., 5-6-7 ton shovel-crane!

WE HAVE A NEW 7 TON BANTAM

Now, to let you handle bigger lifts, Schield Bantam offers a 7-TON CRANE on Heavy-Duty "300" Crane Carrier! You can also get 5-ton (Crawler) and 6-ton (Carrier and Self-Propelled) cranes to fit your job needs . . . the most complete crane line-up in the ⅜ yd. field!

RT-12

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WORLD'S LARGEST PRODUCERS OF TRUCK-CRANES AND EXCAVATORS

CLIP . . . Mail Today for more information about the BANTAM.

SEND INFORMATION ON:

- ☐ Name of nearest Bantam Distributor
- ☐ New 7-Ton Bantam
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- ☐ Clam ☐ Crane ☐ Drag ☐ Shovel
- ☐ Back Hoe ☐ Backfiller ☐ Magnet

Name _____ Title _____

Company _____

Address _____

City _____ State _____

Railway Personnel (Cont'd)

in a civilian capacity at Pompton Lakes (N.J.) works of the Du Pont Company. From 1945 to 1947 he served with the U. S. Army chemical warfare and transportation services and after discharge he joined the Navy Department as a consultant at the New York Naval Shipyard.

E. T. Rucker, assistant to the vice-president, construction and maintenance, **Chesapeake & Ohio,** has been appointed acting chief engineer of the Northern Region, with headquarters at Detroit, Mich. **T. F. Burris,** chief engineer of the Northern Region, has been temporarily assigned to special duties.

Francis L. Rees, who has been promoted to division engineer on the Santa Fe at Emporia, Kans. (**RT&S,** Sept., pg. 90), was born on June 29, 1921, at Topeka, Kans., and was graduated from the University of Kansas in 1950 with a Bachelor of Science degree in civil engineering. He entered the service of the Santa Fe in August 1938, serving as a bridge and building helper and chairman until he entered military service where he spent 42 months in the Ordnance Corps. Mr. Rees returned to

Francis L. Rees

the Santa Fe in November 1945 as a chairman at Emporia, being advanced to rodman at the same point in the following year. In 1950 he was made acting roadmaster at Arkansas City, Kans., then becoming assistant roadmaster in April 1951, roadmaster in August 1951 and acting division engineer at Emporia on August 1, 1952. He returned to Arkansas City as roadmaster in May 1953, but was reappointed acting division engineer at Emporia in December 1954.

B. H. Crosland, assistant chief engineer of the St. Louis-San Francisco, with headquarters at Springfield, Mo., has been promoted to the newly created position of chief engineer maintenance of way, with the same headquarters. **G. A. Honey,** assistant superintendent-roadmaster of the Alabama, Tennessee & Northern, a Frisco subsidiary, has been appointed superintendent of construction of the Frisco. Temporarily Mr. Honey will have headquarters at Memphis, Tenn., where he will supervise con-

struction of a new $10,000,000 yard the road is constructing in that vicinity.

G. E. Warfel, assistant superintendent at Tulsa, Okla., has been appointed division engineer of the Western division with headquarters at Enid, Okla., succeeding **A. L. Fisher** who retired on October 1 after 43 years of service with the Frisco. **O. E. Fort,** division engineer at Fort Worth, Tex., has been transferred to the Eastern division, north/south, with headquarters at Springfield, succeeding **H. F. Busch,** who has retired after 48 years of service with this road. **J. H. Brown,** assistant division engineer at Fort Scott, Kans., has been promoted to division engineer of the Fort Worth and Sherman subdivisions of the Southwestern division with headquarters at Fort Worth, Tex., succeeding Mr. Fort.

Alphus L. Leach, who has been appointed assistant engineer of bridges of the Illinois Central with headquarters at Chicago (**RT&S,** Sept. pg. 86) was born on December 3, 1898, at Mt. Sterling, Ohio. He obtained his higher education at Ohio State University, graduating with a civil engineering degree in 1921. In July of that year he entered railroad service with the Illinois Central as a masonry inspector in the bridge department at Chicago. Thereafter he served successively as draftsman, assistant engineer, designer and chief designer in the same department. In 1952 he was promoted to assistant to engineer of bridges, which position he held until his recent appointment.

J. W. Thomas, assistant division engineer on the Seaboard Air Line, with headquarters at Jacksonville, Fla., has been promoted to principal assistant division engineer with headquarters at Americus, Ga. Mr. Thomas first entered the service of the Seaboard in July 1942, serving as a telegraph operator at Hamlet, N. C. After serving during the war as an Air Force pilot, with the rank of second lieutenant, Mr. Thomas graduated from North Carolina State College with a degree of Bachelor of Science in engineering, returning to the Seaboard in 1949 as assistant to the division engineer at Raleigh, N. C., and later at Atlantic, Ga. He was advanced to assistant division engineer in May 1950.

William Glavin, who has been appointed assistant division engineer on the Pennsylvania at Altoona, Pa. *RT&S,* Oct., pg. 94), was born on September 8, 1920, at Lancaster, Pa. He is a graduate of Pennsylvania State University with a Bachelor of Science degree in civil engineering. On June 16, 1941, Mr. Glavin entered the service of the Pennsylvania as a chairman at New York, and later became an engineering apprentice at New Brunswick, N. J. From 1942 to 1946 he served in the U. S. Army, then returning to the railroad as engineering apprentice at New Brunswick. In January 1947 Mr. Glavin was made assistant supervisor of track at Williamsport, Pa., and in June of the same year he was transferred to Perryville, Md. He was promoted to supervisor of track at Kalamazoo, Mich., in 1949 and subsequently held the same position at Salisbury, Md.,

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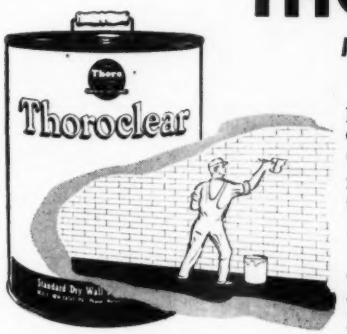

Ask your dealer about this powerful silicone water repellent developed by years of research by General Electric Company and now produced by us for your protection. *Ask for Circulars No. 30 and 31.*

No change in color or texture of brick, limestone, sandstone, tile or stucco surfaces. Applied by brush or spray.

Keep water out of your masonry walls and protect interior plaster, paints and expensive furnishings.

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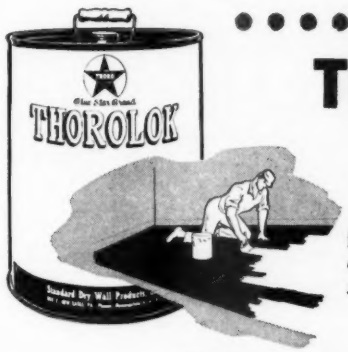
Repair those broken sills, steps, concrete floors, chimneys and other defective masonry! *Ask for circular No. 20.*



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Use it for your basement or factory floors. New, with special alkali resistant pigments. *Ask for Color Card 32-C.*

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and Trenton, N. J. He was located at the latter point at the time of his recent promotion to assistant division engineer.

TRACK

W. Laird Harris III, assistant track supervisor on the Maine Central at Lewiston, Me., has been promoted to track supervisor with headquarters at Brunswick, Me., succeeding **Wesley M. Martin,** whose promotion to division engineer is noted elsewhere in this issue.

Robert N. Schmidt, who has been appointed roadmaster on the St. Louis-San Francisco at Ft. Scott, Kans. (**RT&S,** Oct., pg. 78), was born on January 21, 1923, at Reedley, Calif. He is a graduate of the Missouri School of Mines (1950), and on June 1, 1950, entered the service of the Frisco. He was advanced through various positions to that of assistant roadmaster, which he was holding at the time of his recent promotion. From 1942 to 1946, Mr. Schmidt served in the United States Air Corps.

Carl G. Yund, who has been appointed supervisor of track on the Pennsylvania at Marion, Ind. (**RT&S,** Oct., pg. 78), was born on June 28, 1928, at Cincinnati, Ohio. A graduate of the University of Cincinnati, his first service with the Pennsylvania occurred in April 1947 when he served as a cooperative student from the university. In August 1951 he became a junior engineer on the road at Chicago, and in March 1952, he was advanced to assistant supervisor of track at South Chicago. In August 1953 he was transferred to Steubenville, Ohio, where he was located at the time of his recent promotion to supervisor of track.

J. A. Matthews, roadmaster on the Centreville subdivision of the Edmundston division of the Canadian National, has been transferred to the Temiscouata and Grand Falls subdivisions, with headquarters at Edmundston, N. B., succeeding **J. F. Boyd** who has retired. **Walter D. Geldart,** assistant roadmaster on the Springhill subdivision, has been promoted to roadmaster of the Chipman subdivision, with headquarters at Napadogan, N. B., succeeding **M. Cusack** who has been transferred to the Centreville subdivision to succeed Mr. Matthews.

Marshall L. Atkins, who has been appointed supervisor of track on the Illinois Central at Mendenhall, Miss. (**RT&S,** Oct., pg. 78), was born on April 3, 1926, at Arcadia, La. Mr. Atkins graduated from Louisiana State University in 1949, with a Bachelor of Science Degree in civil engineering and entered the service of the Illinois Central on July 19, 1951, as a junior engineering aid in the bridge department. On January, 1, 1952, he was transferred to the Vicksburg division as junior engineering aide, and in August 1953 he was promoted to junior engineer on the same division. On November 1, 1953, he was named assistant supervisor on the Vicksburg division, and on September 1, 1955, he assumed the position of supervisor of track at Mendenhall.

SPECIAL

W. E. Doty has returned to service as timber treating engineer of the New York Central System with headquarters Rome, N. Y. **J. C. Hamlin,** acting timber treating engineer, has returned to his former position of plant supervisor, with headquarters also at Rome.

E. L. Russell, a principal assistant division engineer on the Seaboard Air Line, has been named assistant real estate agent, with headquarters at Norfolk, Va. Mr. Russell has been connected with the engineering department of the Seaboard since 1941. He has served successively as junior engineer, assistant to the division engineer, assistant division engineer and principal assistant division engineer.

OBITUARIES

Henry C. Archibald, retired assistant chief engineer, Boston & Maine, died at Boston, Mass., on August 5.

Luther L. Lowe, formerly a roadmaster on the Missouri Pacific, who retired early in August as assistant superintendent of the Memphis division with headquarters at Wynne, Ark., died recently.

USE TIE PLATE LOCK SPIKES

for Minimum Annual Cost of Ties in Track

• hold gage • prolong life of ties
• save maintenance expense

LOCK SPIKES hold tie plates firmly in place on cross-ties and bridge timbers. They are quickly and easily driven, or removed, with standard track tools. Driven to refusal, the spread shank is compressed by the walls of the hole. Tie plates are held against horizontal and vertical movement under spring pressure. Play between the spike and the hole is eliminated—gage is held and plate cutting is overcome.

LOCK SPIKES not only become integral with the tie plate, but also the lateral pressure by the legs against the sides of the tie hole, binds the spike in the tie. This unique feature gives tight adhesion between tie and plate.

LOCK SPIKES were first installed in 1947. Since they have been in track, no maintenance whatever has been required. Cost of installing in track is low and comparable to cut spikes. The advantages and saving only found in Lock Spikes reduces the annual cost of ties in track and maintenance expense to a minimum. We invite your investigation.

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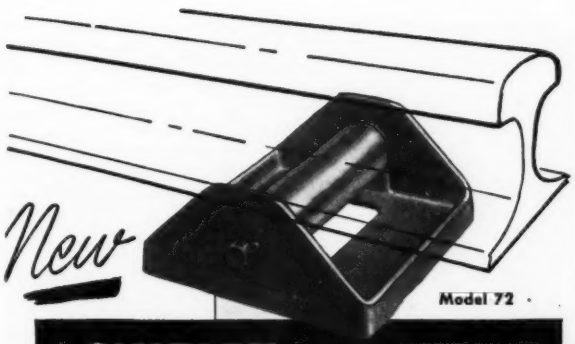

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RAIL DOLLY

Makes Rail Bumping Faster, Easier, Safer

A REAL WORK-SAVER WHEN:

- **Removing Rail**
- **Installing New Rail**
- **Lining Up Bolt Holes**
- **Driving Up Expansion**
- **Adjusting Switch Points**
- **Installing Welded Rail**

• The Rail Dolly is a heavy-duty roller mounted on a low metal stand. Used in pairs, Rail Dollies handle the heaviest of bumping rails —make accurate bumping possible with less men. Cut damage to rail ends. Far safer than swinging rails with tongs or sliding on greased plates. Guides on each side of Dolly stand prevent rail from slipping off; cleats in base anchor Dolly firmly on top of ties or ballast. Another aid in driving rail, the Simplex Rail Puller and Expander, prevents rail from returning to its original position after bumping. Both devices described in Bulletin RR 72. WRITE:

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2543 Gardner Road, Broadview, Ill.

STATEMENT required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of Railway Track and Structures, published monthly at Bristol, Connecticut, for November, 1955.

1. The names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Simmons-Boardman Publishing Corporation, 30 Church Street, New York 7, N.Y.

Editor, M. H. Dick, 79 West Monroe Street, Chicago 3, Ill.

Associate editor, R. E. Dove, 79 West Monroe St., Chicago 3, Ill.

Business manager, F. W. Smith, 79 West Monroe Street, Chicago 3, Ill.

2. The owners are: Simmons-Boardman Publishing Corp., 30 Church St., New York 7, N.Y. Stockholders of one percent or more, James G. and Louise Lyne, 30 Church St., New York 7, N.Y., Arthur J. McGinnis, 30 Church St., New York 7, N. Y., Joseph S. and Clarice Crane, 30 Church St., New York 7, N. Y., Frederick A. and Artimese B. Clark, 30 Church Street, New York 7, N.Y., Samuel O. and Carrie E. Dunn, 79 West Monroe St., Chicago 3, Ill., Edward G. & Elizabeth Gavin, 79 West Monroe St., Chicago 3, Ill., Joseph or Katherine Sanders, 2909 Maple Ave., Dallas 4, Texas, John R. Thompson and Kathe Thompson, 79 West Monroe St., Chicago 3, Ill., Mae E. Howson, 6922 Paxton Ave., Chicago, Ill., Ella L. Mills and Catherine S. Mills, Westfield, N.J., Ruth Wheaton Johnson, 1615 Ravenna Blvd., Seattle 5, Wash., William E. Russell as Trustee L/W/T of Ida R. Simmons F/B/O, Mrs. E. S. Fenton, c/o Russell and Russell, 41 East 42nd St., New York 17, N.Y., J. Streicher & Co., 2 Rector St., New York, N.Y., Partners of J. Streicher & Co. are: Joseph Streicher, Jack L. Streicher, Ethel Streicher, Judson Streicher all of 2 Rector St., New York, N.Y., J. V. McManus, 39 Broadway, New York, N.Y.

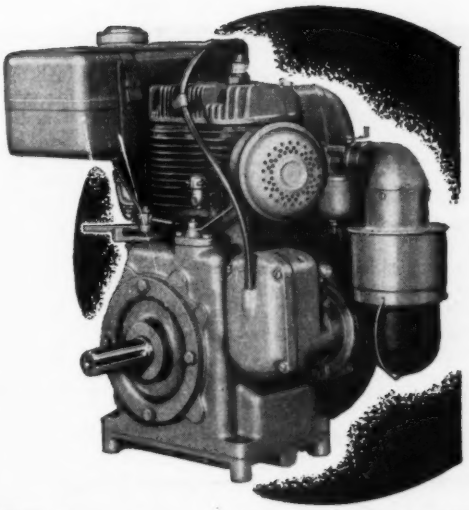
3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

M. H. DICK,
Editor.

Sworn to and subscribed before me this 30th day of September, 1955.

RUTH WEGGEBERG
Notary Public, State of Illinois
Qualified in Cook County
[SEAL] (My commission expires February 3, 1957)



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Model ACN, 5½ H.P. Single Cylinder HEAVY-DUTY *Air-Cooled* ENGINE

Here is a new, light weight engine, designed and built to Wisconsin heavy-duty standards in all details, offering original equipment builders and engine users maximum power advantage and performance in a 2.3 to 5.6 hp. range at 1600 to 3600 rpm.

Like all Wisconsin Engines, the Model ACN has the built-in Lugging Power that hangs on through the shock load pinches and keeps the job moving without stalling. With a 2⅝" bore x 2¾" stroke, it has a 14.88 cu. in. displacement.

Heavy-duty features include tapered roller main bearings at BOTH ends of the crankshaft; rotary type high tension OUTSIDE Magneto with Impulse Coupling for quick, all-weather starts at low cranking speed, pump-circulated splash lubrication *plus* efficient AIR-COOLING from extreme sub-zero to 140° F.

Perhaps this is just the power component you have been looking for — *power to fit the machine; power to fit the job.* Write for Bulletin S-179.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

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Association News

Northwest Maintenance of Way Club

The next meeting of this club will be held on November 17 at the Midway Civic Club, 1931 University Avenue, St. Paul, Minn. H. S. Claybaugh, division engineer, Armco Drainage & Metal Products, Inc., will present a program on the use of flexible drainage structures in the Northwest. Mr. Claybaugh will exhibit a film describing the role of flexible structures in modern drainage and construction practice.

American Railway Engineering Association

A series of important meetings of AREA groups were held early in November. The Board of Direction held its regular fall meeting at Chicago on November 4. Immediately preceding that meeting, the Nominating committee met at Association headquarters to set up the slate of officers to be elected at the annual meeting of the Association in March 1956. Looking forward to that meeting, the Arrangements Committee met on November 3 at Association headquarters to perfect the final committee organization and to make detailed preliminary arrangements for every aspect of the annual meeting, except the technical program itself. The Rail Committee, which will meet at the Palmer House, Chicago, on November 16, is the only standing committee to schedule a meeting for November.

Maintenance of Way Club of Chicago

The November meeting of the club will be held on the 28th at the Hamilton Hotel, Chicago. The program will consist of addresses by several engineering and maintenance officers of Eastern railroads who will describe the flood damage that occurred on their roads in August and will tell how rehabilitation work was carried out.

The first meeting of the season was held on October 31. The program of this meeting consisted of the showing of a motion picture in color entitled "Long Rails on the Santa Fe." The film depicted the welding of rails on the Santa Fe by both the Matisa and the oxacetylene pressure processes, and also showed how long rails are transported and laid.

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A Real Production Team!

A Burro Crane, its operator and two men on the rail will set a fast pace for the track gang to follow. Rail gangs equipped with a Burro Crane produce more work per shift at lower cost because Burros have the pace-setting speed and efficiency that helps them keep on schedule. Equally efficient with tongs, magnet, hook, bucket or dragline, Burro Cranes handle any job in stride. Fast travel speeds get them to the job in a hurry . . . heavy draw bar pull permits hauling work train and gang.

Only Burro Cranes Have:

- Fast travel speeds . . . up to 22 MPH
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- Elevated Boom Heels for working over high sided gondolas
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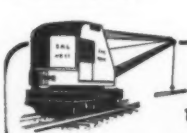

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Organizations

American Railway Bridge and Building Association—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

American Railway Engineering Association—Neal D. Howard, Secretary, 59 E. Van Buren street, Chicago 5.

American Wood-Preservers' Association—W. A. Penrose, Secretary-treasurer, 839 Seventeenth street, N. W., Washington 6, D. C.

Bridge and Building Supply Association—L. R. Gurley, Secretary, 201 North Wells street, Chicago 6.

Maintenance of Way Club of Chicago—S. Kosco, Secretary-Treasurer, 135 East Eleventh place, Chicago 5.

Metropolitan Maintenance of Way Club—Secretary, 30 Church street, New York.

Mississippi Valley Maintenance of Way Club—P. E. Odom, Secretary-Treasurer, Room 1008, Frisco Building, 906 Olive street, St. Louis 1, Mo.

National Railway Appliances Association—Kenneth Cavins, Secretary, 310 S. Michigan avenue, Chicago 4; Lewis Thomas, Assistant Secretary, 59 East Van Buren street, Chicago 5.

Northwest Maintenance of Way Club—L. C. Blanchard, secretary-treasurer, Room 27, Milwaukee Depot, Minneapolis 1, Minn.

Railway Tie Association—Roy M. Edmonds, Secretary-Treasurer, 1221 Locust street, St. Louis 3, Mo.

Roadmasters' and Maintenance of Way Association of America—Elise LaChance, Secretary, 431 S. Dearborn street, Chicago 5.

Track Supply Association—Lewis Thomas, Secretary, 59 E. Van Buren street, Chicago 5.

Deck—4' x 5' weatherproof plywood and corrugated steel construction.

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This handy, light-weight push car carries tools to the job site from the nearest crossing or other point where truck or bus must stop. Men *arrive fresh and ready for work having been spared the laborious job of toting hundreds of pounds of tools and equipment—saves time—and muscles—for the important job!* Rolls easily on anti-friction bearings even when fully loaded.

Handle can be inserted on either side for pushing in either direction.

Weighs only 160 lbs.—yet will carry a thousand pounds of tools or materials! This is due to the novel steel-reinforced weather-proof plywood deck construction. *Light—but amazingly strong!* Can be set up or dismantled in *less than a minute* for easy loading into a truck, bus or motor car.

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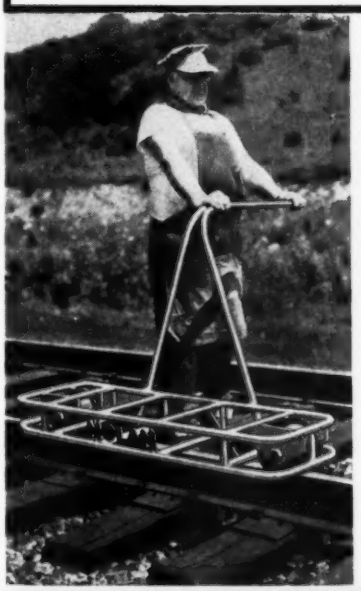
WOOLERY MACHINE CO.

New! NOLAN TRACK DOLLY



This many-purpose unit is built of tubular high-carbon steel. It is strong and serviceable for the transporting of heavy rails, railway ties, supplies, tools, etc.

The operator's handle is conveniently placed to assure correct balance and full control of heavy loads. The Inspector's model has a detachable handle to permit carrying the entire unit in a truck or car.

STANDARD DOLLY—
Price $69.50
Length 50½"—Width 15½"
Ht. above rail, 6⅜"—Wt. 88 lb.

INSPECTOR'S DOLLY—
Price $65.00
Length 36"—Width 14"
Ht. above rail, 6"—Wt. 60 lb.

Write for complete catalog of Nolan railroad equipment and supplies.

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KWIK-MIX bituminous MIXERS

- LOAD TRUCKS AND HOPPERS
- STOCKPILE
- POUR DIRECT ON PATCHWORK

Portable Kwik-Mix Mixers economically produce bituminous mix at any location to build and maintain smooth grade crossings, walks, platforms, parking areas. These mobile mix plants on pneumatic tires do direct pouring into pot holes on small quantity patchwork. Equipped with Kwik-Mix tower loader (above) they stockpile materials at various job sites, or load trucks. Tower discharges at heights to 8 ft.-9 in. Mixers also mount on skids on elevated platforms as stationary central-mix plants. 2 sizes — 10 and 14 cu. ft.

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Supply Trade News

GENERAL

The Construction Machinery Division of **Clark Equipment Company** has announced a new address for its Pipestone plant. The address is P. O. Box 599, Benton Harbor, Mich.

The Railway Maintenance Corporation has recently appointed the **R. E. Bell Company** as its sales representative in the St. Louis and Southwest territories. The Bell concern has headquarters at St. Louis.

PERSONAL

Ralph G. Michael, assistant engineer on the Chicago & Western Indiana, has resigned to become chief engineer of the **WM Corporation,** Chicago.

C. George Dandrow has been appointed to the newly created position of vice-president for customer relations, **Johns-Manville Corporation,** effective January 1, 1956. In his new post, among other things, he will aid company divisions in sales in the transportation industry.

The **American Brake Shoe Company,** together with its various divisions, including the **Rampo Ajax Division,** has announced the removal of its Chicago general offices from 109 North Wabash avenue to 155 North Wacker Drive, Chicago 6.

Oscar Swallow has been elected president of the Southwestern Petroleum Company, Inc., Fort Worth, Tex.

The **Cullen-Friestedt Company,** Chicago, has appointed **H. W. Lewis** and **Fred Schwinn** of the **H. W. Lewis Equipment Company,** San Antonio, Tex., as representatives for the company in the southwest territory.

Blair Blowers, Jr., has been appointed district representative in Cleveland, Ohio, for the **Railroad Materials Corporation,** according to an announcement by **A. W. Boorom,** president of the company.

A number of additions and changes have been announced in sales and service personnel of the **Kershaw Manufacturing Co., Inc.,** Montgomery, Ala. **Howard Rutledge,** Evanston, Ill., has been appointed district manager for the Chicago and Twin Cities area; **Karl Olds** has been appointed district service representative for the Chicago area, with headquarters at Plymouth, Ind.; **E. F. Turner** has been transferred to Kansas City, Mo., and will handle all sales and service representation in the Midwest; **Stan Botterill,** Frost Machinery Company, Ltd., Winnipeg, Man., has been appointed sales and service representative for Western Canada; **John Gardner,** with headquarters at West Orange, N. J., has been appointed district service representative for the Eastern United States; and **Robert A. Baer** and **W. T Richards,** San Francisco, Calif., have been appointed sales representatives for the Western part of the country.

As noted in the feature section of this issue **W. C. McKay,** formerly assistant vice president in charge of operations, Philadelphia Transportation Company, has been appointed executive vice president of the newly formed **Kershaw Equipment Leasing Corporation,** with headquarters at Montgomery, Ala.

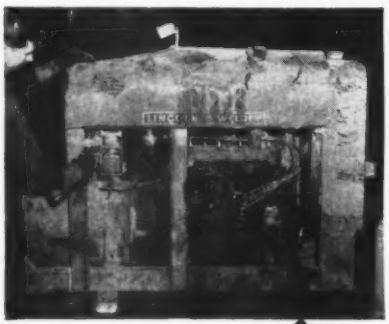
E. C. McClintic has been appointed assistant to the president of the **Chipman Chemical Company, Inc.,** Bound Brook, N. J. Mr. McClintic was formerly associated with the Pure Carbonic Company, New York, where he was vice president in charge of traffic.

Don C. Smith has been named manager of the sales department of the Wood Preserving Division, Koppers Company, Inc. He takes over the sales duties previously performed by **Douglas Grymes, Jr.,** who was recently named vice president and executive assistant to the division's general manager. In his new position Mr. Smith will give assistance to the general manager of the division in the formulation of sales policies.

"LINCONDITIONING"

LINCOLN FACTORY REBUILDING

provides new welder performance from your old machines AT LOW PRICE!



BEFORE "LINCONDITIONING"

AFTER "LINCONDITIONING"

GUARANTEED PERFORMANCE

- New machine guarantee goes with every remanufactured welder

LOW COST

- Cost of "Linconditioning" is less than half the price of a new machine.

PRECISION REPLACEMENT PARTS

- All parts are reconditioned and returned to new product standards or are replaced with new parts.

MORE INFORMATION

Learn how "Linconditioning" can cut your repair and replacement costs. Details in Bulletin 480-4. Write on your letterhead to The Lincoln Electric Railway Sales Company, 11 Public Square, Cleveland 13, Ohio. Railroad representatives of

THE LINCOLN ELECTRIC COMPANY

Cleveland 17, Ohio

The World's Largest Manufacturer of Arc Welding Equipment

WHEN YOUR TRACK BALLAST NEEDS CLEANING...

CALL ON

SPENO
BALLAST CLEANING SERVICE

SPENO contract service eliminates capital investment by Railroads in this single-operation equipment.

SPENO'S double screening system gives a thorough cleaning in less time than a single screening by other mechanical means.

SPENO Ballast Cleaning Equipment does not foul train traffic on adjacent tracks.

SPENO'S record of high production and low cost can be verified by the sixteen Class I railroads now served.

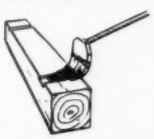
Just ask the Railroads that have used us.
FRANK SPENO RAILROAD BALLAST CLEANING CO., INC.
306 North Cayuga St., Ithaca, N. Y.

Keep "IN SERVICE" ties

with OSMOPLASTIC TIE PRESERVATIVE

4 WAY CHEMICAL ACTION of this *proven* deep-penetrating wood preservative combats spike pull, reduces plate cutting, hardens wood, seals out moisture and grit and actually REINFORCES decay prevention quality of creosote in ties. Just BRUSH IT ON tie plate areas of new ties, readzed surfaces of used ties, and on splits and derailment scars of in-service ties. Then, they'll LAST YEARS LONGER and drastically cut costs. Recommended for M/W Engineers from coast to coast.

EASY TO APPLY



RAILROADING'S MOST VERSATILE PRESERVATIVE

Made by the manufacturer of EIGHT of the nation's largest selling wood preserving specialties, Osmoplastic itself has many uses. B & B Engineers use it extensively on splices, heel joints, stringers, in all spike and bolt holes and on piling cut-offs. Signal & Communications Engineers use it for "ground-line" treating of their standing poles.

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Get all the facts, prices, savings and costs from this illustrated folder.

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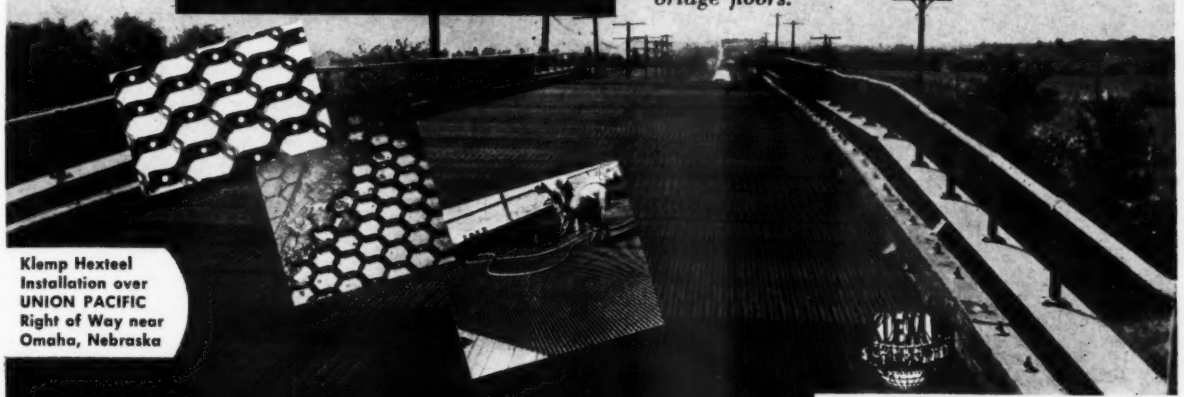

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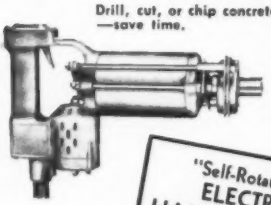

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Manufacturers' Literature

Following is a compilation of free literature, pamphlets and data sheets offered by manufacturers to the railroad industry. Circle the number(s) on the coupon below to receive the desired information. Requested items sent direct by manufacturers.

1. DIESEL ENGINES. *Caterpillar Tractor Co.* 8-page 2-color pocket-size folder (DE582) "Danger in the Heat Zone" discusses how heat prostration in vital diesel engine parts can be avoided through sound metallurgy and careful machining (folder available also in French, Spanish and Portuguese, *specify if desired.*

2. RAIL ANCHOR. *True Temper Corp.* 8-page booklet (J-6514) "New, Improved True Temper Bulldog Rail Anchor" describes and illustrates with photos and drawings the new Bulldog Rail Anchor; also depicts other True Temper railway tools.

3. SPRAYED METAL COATINGS. *Metalweld, Inc.* 4-page 2-color profusely illustrated bulletin "MW Sprayed Metal Coatings" for contamination and corrosion protection; discusses use on processing equipment, storing and shipping containers, tanks, tank cars; also discusses use in combination to protect bridges and trestles, steel piling, refrigeration equipment, underground conduits and fabricated steel.

4. DIESEL POWER. *Caterpillar Tractor Co.* 6-page 2-color fanfold (D557) "Versatile Diesels . . . The Track to Savings" is a convenient check list for railroads in determining their repowering needs or in deciding where diesel engines and electric sets may be used advantageously.

5. ASBESTOS - CEMENT PIPE. *Johns-Manville.* 8-page profusely illustrated 2-color booklet (TR-160A) "Transite Pressure Pipe and the Ring-Tite Coupling" shows manufacturing methods, describes savings in installation time, and outlines characteristic advantages once it is in the ground.

6. CELLULAR GLASS INSULATION. *Pittsburgh Corning Corp.* 8-page catalog "Foamglas, the Cellular Stay-Dry Insulation for Piping and Equipment" describes, illustrates, gives specifications and presents physical properties of cellular glass insulation; photos of applications included.

7. SPRAY PAINTING EQUIPMENT. *The DeVilbiss Co.* Catalog covering maintenance spray painting equipment (M-50) includes complete spray painting outfits, individual components and guides showing correct gun and nozzle combinations to use.

8. TRACTORS. *Caterpillar Tractor Co.* 12-page 2-color booklet (DE-541) "Railway Maintenance With Cat Diesel Power" describes and illustrates typical applications; includes on-the-job photos and testimonials from operators on Cat Diesel Engines and Tractors.

9. DIGGERS. *Acker Drill Co.* 8-page folder (#40) "Acker AP Hole Digger For All-Purpose Digging" describes, illustrates and gives specifications on the all-purpose digger for setting poles (telephone and electric line), guard rails and fence posts, crossing signs, signal posts, and for drilling blast holes, digging cesspools and wells, foundation work.

10. NUMBERS & LETTERS. *W. H. Brady Co.* 6-page 3-color bulletin (165) "Self-Sticking. All-Purpose Numbers and Letters" for marking bays, bins, columns, posts, barrels, shipping containers, machines and any other equipment in the office, shop or on the road, for identification, safety and maintenance; prices and free usable samples included.

11. TUBE FITTINGS. *Crawford Fitting Co.* Series of 4 charts "Variation of Load At Yield Of Type 304 Stainless Steel Tubing When Held By Crawford Swagelok Tube Fittings" gives complete, accurate test data on ½", ¾" and 1" stainless steel tubing.

12. ALUMINUM BRIDGE RAILINGS. *Reynolds Metals Co.* 52-page manual with 117 illustrations and 23 tables "Aluminum Bridge Railings, 1955" presents a wealth of data on use of aluminum; shows designs requiring minimum amount of material and work, and provide maximum in strength, rigidity and pleasing appearance.

13. RUBBER - WHEELED TRACTOR. *The Frank G. Hough Co.* 8-page 2-color 3-hole punched brochure (261) "Model TM Payloader Tractor With Torque Converter and 4-Wheel Drive" describes, illustrates and gives specifications on the versatile 4-wheel drive prime mover for car-switching and general drawbar work.

14. DIESEL ENGINES. *Caterpillar Tractor Co.* 8-page 2-color broadside (717-31554) "Caterpillar Announces Two New Additions to its Engine Family" describes, illustrates and gives specifications on the D342 and D339 heavy duty diesel engines; photos show typical uses.

15. FLEXIBLE METAL HOSE. *Atlantic Metal Hose Co.* Bulletin (20-E) describes and illustrates corrugated metal hose of annular and helical construction; complete engineering data including bending radii, bursting pressures and weights included.

16. PROTECTIVE COATINGS. *Dearborn Chemical Co.* Two bulletins (3007 & 3009-A) describe, illustrate and give complete data on Dearborn No-Ox-Id rust preventative for hundreds of railroad uses; prevents rail end failure caused by corrosion fatigue; prevents rail base deterioration.

Reader Service Department **November, 1955**
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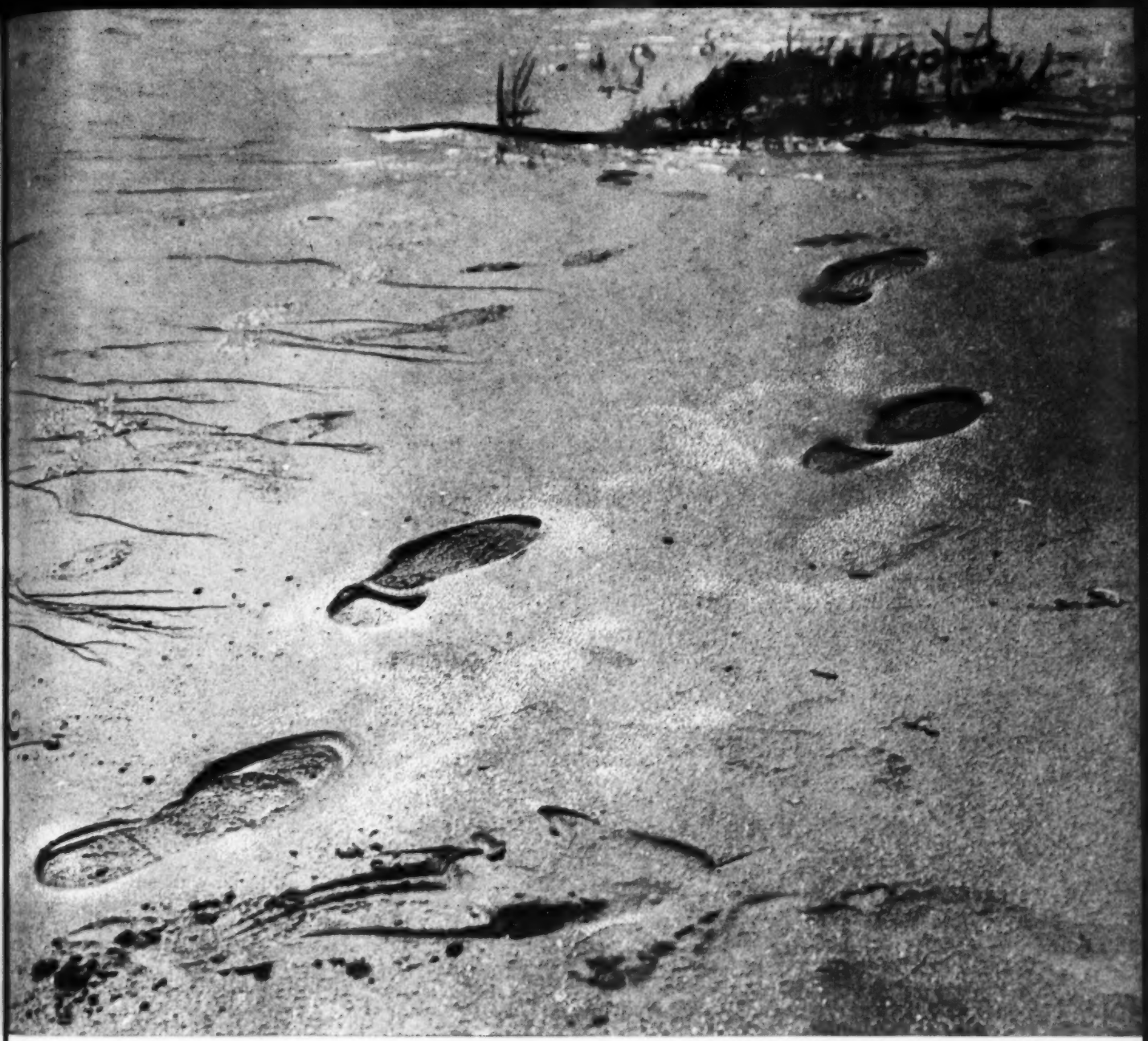

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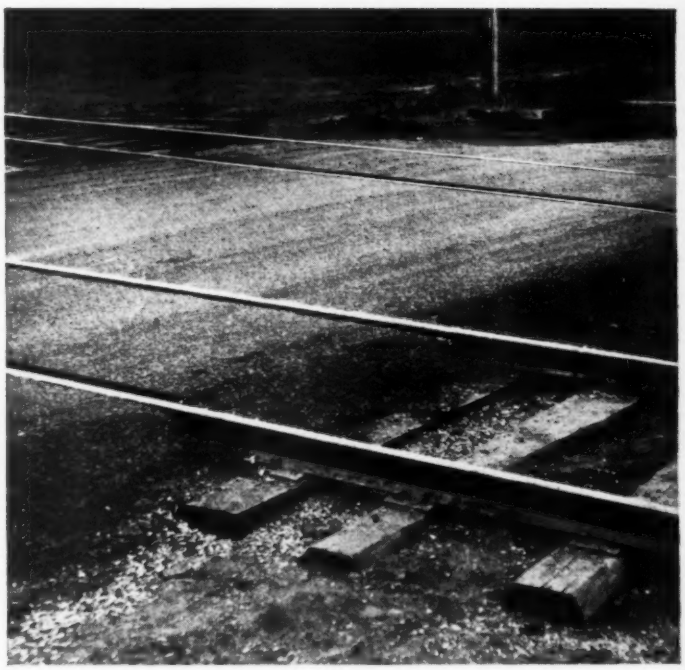

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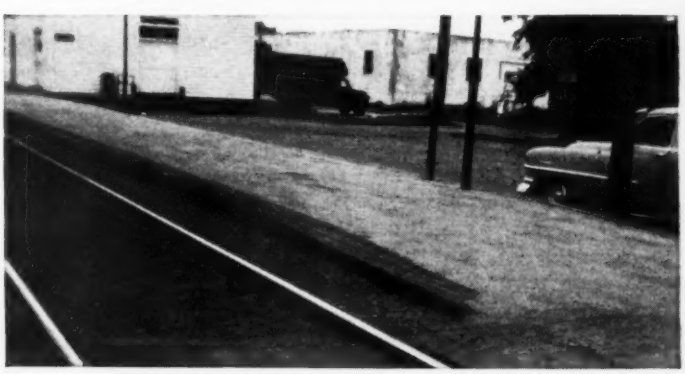

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